BULLETIN

OF THE

AMERICAN

Geographical and Statistical Society.

VOL. II.

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FOR THE YEAR 1856.

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American Geographical and Statistical Society.

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Geographical and Statistical Society.

VOL. JANUARY, 1857. II.

TRANSACTIONS OF THE SOCIETY.

(CONTINUED FROM VOL. I.)

AT a meeting of the Society held January 11, 1853, the Rev. Dr. HAWKS, Vice-President, in the chair, the Consular Committee reported the following letter, which was read and ordered on file.

To the American Geographical and Statistical Society:

WE will be happy to co-operate in the establishment of the American Geographical and Statistical Society, for the purpose of obtaining from the countries with which we are respectively connected any in-

formation, maps. and documents that may be of interest and advantage to the mercantile community.

MARCH, 1852.

J. W. SCHMIDT, Consul-General of Prussia.
CHAS. F. LOOSEY, for the Austrian Consulate.
FELIX LACOSTE, Consul-General of France.
ROBERT BUNCH, Her Britannic Majesty's Vice-Consul.
G. FREDERICK DARBY, Vice-Consul for Montevideo.
HIPPOLYTE MALI, Vice-Consul of Belgium.
EDWIN A. OELRICHS, Consul of the City of Bremen.
A. BOLLERMANN, Consul of Grand Duchy of Hesse.
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LS. PH. DE LUZE, Consul of Switzerland.
SCHUYLER LIVINGSTON, Consul for Argentine Confederation.
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G. I. BECHTEL, Consul-General of Brunswick.
THEODORE H. RILEY, Consul for Chili.
CHAS. A. HECKSCHER, Consul for Mecklenburg Schwerin.
C. EDW. HABICHT, Acting Consul-General of Sweden and Norway.

On motion of Mr. Russell, it was

Ordered, That the Corresponding Secretary communicate to Prof. Bache, the desire of this Society to co-operate with the officers of the Government, in any particular manner in furthering the scientific objects of Dr. Kane's Arctic Expedition, and to express its willingness to contribute to any fund that may be raised to furnish him with suitable scientific assistants, and respectfully to request the Superintendent of the Coast Survey, to aid Dr. Kane in obtaining such services, as the important character of his intended investigations and researches demands.

Mr. Congdon, the Treasurer, reported fifty-eight dollars and eighteen cents in the Treasury.

The Secretary of the Board of Trustees reported the following gentlemen, as having been recommended by the board for election :

Dr. John W. Francis, and William Chauncey, George Bird, James A. Burtus, Jr., Richard B. Kimball, Francis W. Worth,

John H. Brower, Edward K. Collins, S. Coles Mott, I. D. Andrews, George H. Moore, George C. Morgan, R. C. Morse, S. E. Morse, Esquires, Rev. C. Hall, D. D., Rev. R. Baird, D. D., Rev. Abel Stevens, and Rev. W. H. Bidwell; William A. Spencer, William B. Morris, Paul Arpin, Frederic Avery, John M. Attwood, J. Carson Brevoort, Nicholas Carroll, C. Dinsmore, C. Gill, R. H. Gillett, Francis Hopkins, George P. Putnam, Henry O. Reilly, Charles S. Parmenter, Henry B. Robinson, W. S. Skiddy, W. E. Sibell, Philip W. Searle, Charles E. Story, Moses H. Grinnell, Daniel B. Fearing, Benj. F. French, Zadoc Pratt, Charles Butler, George W. Pratt, J. W. Alsop, Joseph Gaillard, Henry Eyre, Shepherd Knapp, G. W. Blunt, Charles A. Stetson, John Jacob Astor, Jun., Esquires, Rev. Dr. Robinson, and Capt. Kennedy.

Mr. Leavitt of the Committee on the Bulletin reported, that the second and third numbers were in press, and would shortly be published; which, on motion, was approved.

Mr. Leavitt, of the Committee on the subject of Mr. Shea's publication on the Discovery of the Mississippi River, reported. The report occupied the attention of the Society, and, on motion, was unanimously approved and ordered among the archives of the Society.

Mr. Bloodgood offered a resolution that the thanks of the Society be tendered to Col. Ramsay for his paper, read before the Society at its last meeting; which, on motion, was unanimously adopted.

Mr. Bloodgood tendered a free passage to any person whom the Society may designate to further the objects of Geographical science on the River Paraguay; and, on motion, it was Resolved, that the thanks of the Society be given for this liberal offer. Adjourned.

Meeting, February 8th, 1853; the Hon. GEORGE BANCROFT, President, in the chair.

Mr. Russell, Corresponding Secretary, read several letters and communications.

Mr. Leavitt, of the committee on the publication of the Bulletin, reported that the second number would contain Dr. Kane's paper read before the Society, and Mr. Dudley's paper on Cotton.

The Society then proceeded to the election of officers; Mr. Jay and Mr. Leavitt, were appointed Tellers. The following gentlemen were declared to be unanimously elected:

President.—Hon. GEORGE BANCROFT, LL. D.

Vice-Presidents.—Henry Grinnell, Esq., Rev. Francis L. Hawks, D. D., LL. D., John C. Zimmerman, Sen. Esq.

Treasurer.—Charles Congdon, Esq.

Recording Secretary.—M. Dudley Bean, Esq.

Corresponding Secretary.—Archibald Russell, Esq.

Foreign Corresponding Secretary.—S. DeWitt Bloodgood, Esq.

Librarian.—Rev. Joshua Leavitt, D. D.

Trustees.—Henry E. Pierrepont, Alexander J. Cotheal, J. Calvin Smith, Hiram Barney, Cambridge Livingston, Luther B. Wyman, Wm. Coventry H. Waddell, John Jay, H. V. Poor, and Edward Blunt, Esqs.

Adjourned.

Meeting, March 8th, 1853, Mr. Zimmermann, Vice-President in the chair.

Mr. Leavitt reported a donation of books from the Trustees of the State Library; and also the reception of the Bulletin of the Royal Geographical Society,—for which on motion the thanks of the Society were ordered to be returned.

A map of New Netherlands was presented to the Society, by Mr. Bancroft, from J. Romeyn Brodhead, Esq.; whereupon it was

Resolved, That the thanks of the Society be returned to Mr. Brodhead for his valuable donation.

On motion it was ordered that certain papers on Ethnology be referred to Dr. G. M'Cune Smith and others as a Committee, and that they be requested to report upon the same. Adjourned.

Meeting, March 15th, 1853; the Hon. GEORGE BANCROFT, President, in the chair.

The President introduced to the Society Mr. Pliny Miles, who thereupon read a paper on his late travels and researches in *Iceland*. At the conclusion of the same, the thanks of the Society were tendered to Mr. Miles, and a copy of his paper was requested for the archives of the Society. Adjourned.

Meeting, March 22d, 1853; the Hon. GEORGE BANCROFT, President, in the chair.

A donation of books was reported by Mr. Pierrepont from Mr. Frederick Prime, in behalf of M. Paul Chaix, of Geneva; whereupon it was ordered that the donation be suitably acknowledged.

The President introduced to the Society Capt. Randolph B. Marcy, U. S. A., who there upon read a paper on the subject of his recent explorations, and expedition, by order of the government of the United States, to the sources of the Red River; descriptive of the country, its natural history, and of the Camanche Indians; whereupon the thanks of the Society were tendered to Capt. Marcy, and a copy of his paper requested for the archives of the Society. Adjourned.

Meeting, May 10th, 1853; the Hon. GEORGE BANCROFT, President, in the chair.

Several letters, received since the last meeting, were read by Mr. Russell, Corresponding Secretary.

Mr. Leavitt, Librarian, reported several donations to the Society from various sources.

Ridley Watts, Esq. was elected a member of the Society.

The President introduced the Hon. John R. Bartlett, who read a paper, descriptive of the country in the vicinity of the Mexican Boundary; whereupon, the thanks of the Society were tendered to Mr. Bartlett, and a copy of his paper was requested for the archives of the Society.

Meeting, June 14th, 1853; the Hon. GEORGE BANCROFT, President, in the chair.

The President presented on behalf of Mr. De Bow, a copy of the late census of the United States; whereupon it was

Ordered, That the thanks of the Society be tendered to Mr. De Bow for his valuable donation.

The report of Dr. G. M'Cune Smith, on behalf of the Committee on the subject of "Micronesia" was read by him. On motion the report was accepted and ordered on file.

Mr. Colton presented a plan of New York and its environs, which was referred to a Committee, consisting of Messrs Barney, Zimmerman, and Pierrepont, to report on the same.

Mr. Disturnell presented a plan of the River St. Lawrence; for which the thanks of the Society were duly returned to him. Adjourned.

Meeting, Oct. 11th, 1854; the Hon. GEORGE BANCROFT, President, in the chair.

The President in behalf of the Hon. Hamilton Fish, presented the following donations; to wit: The report of the Superintendent of the Coast Survey; Annual Messages, 1852, 1853, of the President of the United States; Report on the Finances, 1851–52; Report on the Principal Fisheries on the American Seas. And the following donations from Mr. De Bow; to wit: Andrew's Report on the Lake Trade; De Bow's Review of the South and West, vols. 4 and 5: whereupon the thanks of the Society were returned to the several donors.

A donation of a Supplementary Pamphlet, entitled, "Grinnell's Land," was received from Col. Peter Force; whereupon a committee was appointed to report on the same; and Dr. Hawks, and Messrs George H. Moore, and J. Calvin Smith were appointed such committee. Adjourned.

Meeting, Dec. 13th, 1853; the Hon. GEORGE BANCROFT, President, in the chair.

Copies of the Documentary History of the State of New

York were received from the Secretary of State, and the Annual Report of the Coast Survey from Professor Bache; whereupon the thanks of the Society were returned to the several donors.

Several letters and communications were read by Mr. Russell, Corresponding Secretary.

A letter was read from Mr. Pierrepont, tendering his resignation as a Trustee of the Society, which was accepted.

Rev. Dr. Hawks, presented the following resolutions.

Resolved, That this Society has observed with great interest the suggestion of the formation of a *Geographical Department* in the Library of Congress, as proposed at a meeting of the "American Association for the Advancement of Science," by Lieut. E. B. Hunt of the corps of Engineers, U. S. A.; and is desirous of expressing its sense of the importance of the proposed measure to geographical science, as well as to the foreign and domestic commerce of the country.

Resolved, That in the centralization of existing geographical knowledge, we recognize the surest mode of securing a judicious direction of present and future efforts for its extension; and that we regard the present time as unusually fitted to secure a collection of geographical materials such as proposed by Lieut. Hunt.

Resolved, That a committee of this Society be appointed, respectfully to address in its behalf a memorial to the joint Library Committee of Congress, asking their aid in such measures as may be necessary to establish a complete geographical department in the library of Congress.

Which resolutions were unanimously adopted.

Capt. Gibson, in a conversational manner addressed the Society on his late expeditions and captivity in Java.

Mr. Jay presented a Report of the Special Committee of the House of Commons, received from William Brown, Esq., M. P., of Liverpool, recommending the adoption of a decimal coinage in England; and a pictorial chart of the metrical weights and measures established and in use throughout France, which had been forwarded by Hickson W. Field, Esq., from Paris, and offered the following preamble and resolution:

Whereas, The adoption by the leading nations of America and Europe of a decimal system of weights and measures with a common

standard, would be a matter of immense convenience and importance to the commerce of the world; and inasmuch as the existing system of weights and measures in Great Britain and other countries are now undergoing revision, and the present seems on this account especially favorable for united action,—Therefore be it

Resolved, That a committee of three be appointed by this Society, who shall address a memorial to the Congress of the United States, praying that body to take this subject into their early and serious consideration, with the view to the calling of a congress of governmental delegates from the nations most interested in such a change, to meet at Brussels, or some equally convenient point, to consider the practicability of the adoption of a common standard of weights and measures; or to such other action on that behalf as to the wisdom of Congress shall seem best. And that the said committee take such steps in furtherance of the said object, by correspondence or otherwise, as they may find convenient; and that they report, from time to time, to this Society.

Which Preamble and Resolution were referred to the Executive Committee, with instructions to report thereon.

Adjourned.

Meeting, January 10th, 1854; the Hon. GEORGE BANCROFT, President, in the chair.

Mr. Leavitt from the committee to whom the subject was referred, read a letter from Lieut. Maury, signifying his acceptance of an invitation to deliver the annual address before the Society.

The following gentlemen having been recommended by the Trustees, were unanimously elected ordinary members: John Romeyn Brodhead, Esq., Rev. Joseph P. Thompson, D. D., Charles B. Norton, Esq., Hon. Caleb Lyon, Charles Corey Taber, Esq.; and Chevalier Nigre, of Turin, as corresponding member.

Mr. Russell, Chairman of the Special Committee to whom the subject had been referred, presented the following report on a Uniform System of Weights and Measures; viz.,

The subject referred to your committee seems peculiarly to belong to a Statistical Society. Statistics should be regarded as embracing, as well the comparative relations of the facts recorded, as the simple registrations of data. It is difficult to conceive how any comparison can be made when the quantities are unknown; or if known, the difficulty of

such comparison is greatly enhanced when the data are expressed according to different standards. No one can have failed to experience in the most popular reading, the annoyances arising from the different standards of weight, of measures, of distance, or of time. Every book of travels is rendered more or less obscure by referring to measures which convey no impression to the mind of the reader; for though aware of the relation which the terms employed bear to those with which he is conversant, he is not disposed to stop and make the calculation necessary to form an accurate impression upon his mind. But the obscurity which embarrasses the popular reader is often enhanced by the great difficulty of ascertaining the exact value of the terms used by the author. Even in the British empire, till very recently, the term "mile" was applied to three different measures of distance; and to this day the league varies greatly in different continental states.

But if from the popular reader we turn to the student or the merchant, the difficulties are immensely enhanced. The certainty which should prevail is clouded in doubt; and if doubt be dispelled, it is the result of frequent and tedious calculation. In the Treasury Reports of articles exported, the number of measures introduced is great—gallons, quintals, barrels, kegs, tons, tierces, pieces, packs, &c.; and in the articles imported, upwards of five thousand various weights and measures are recognized, by any one of which articles may be invoiced into this country.

The advantages of an approximate or of a general uniformity, being conceded, the question naturally arises, as to the extent of alteration which should be proposed, and the difficulties connected with the substitution of the new Measures. Should it, on inquiry, be found that European nations are willing to adopt some common standard of Measurement, which must, however, involve a general abandonment of the Measures in popular use, it is evident that there is no advantage in limiting the change which the whole system is to undergo. If the Weights and Measures now in the hands of the community can be made available, that arrangement should be adopted as most economical and convenient; but if it is found that they are not available, the more decided and perceptible the alteration is, the less will be the risk of error and confusion. At present we perceive the ambiguity which arises from the use of the term *pound* (avoirdupois and troy); of gallons containing respectively, 270 cubic inches (the corn gallon), 280 inches (the ale gallon) and 231, (the wine gallon); of *hundred weights* of one hundred, and one hundred and twelve pounds. The introduction of new Measures, therefore, nearly equal to those to be displaced, should be avoided; and if any change be deemed advisable, it should be a radical one, based on scientific principles, and adapted to the wants of existing civilization. No nation or individual can attempt the work of creating a general system. It must necessarily be the result of combined action; and, consequently, the prospect of obtaining the candid examination of the subject, in the present state of political relations with the principal

commercial nations, must be regarded as an important element in considering the propriety of proposing, at the present time, to make the subject one of public discussion. On the suggestion of M. Talleyrand, Louis XVI. was requested by the Assembly to write to the king of England, proposing the appointment of a joint commission to examine into the propriety of establishing a system of measures to be adopted by both nations; but the state of political feeling then existing, and the jealousy of every thing emanating from the Constituent Assembly, probably prevented the scheme from being candidly considered; and no notice was taken on the subject at that time by the British government. Now, however, no such jealousy exists, but a most harmonious feeling pervades the three leading commercial nations; and it is well worthy of consideration whether this is not an appropriate time for united national action. By recent parliamentary documents, it appears that England is about to revise her system of weights and measures, and is examining the practicability of introducing a more uniform, decimal scale; and it would conduce greatly to the convenience of the commercial world, if the alterations introduced were of a character suitable for universal adoption.

Under these circumstances your committee would suggest the propriety of presenting to Congress a memorial praying it, in view of the difficulties which still surround the whole subject, to propose the appointment of a joint scientific commission by the United States, England, and France, and of such other nations as might choose to unite, to propose for general adoption such a system as might meet the wants of the commercial community, the geographer, the scientific inquirer, and the public.

In this country the question has repeatedly been discussed, and few subjects have been more ably reported upon; but the question of international agreement has never been acted upon. In 1790, Mr. Jefferson, when Secretary of State, made an interesting report on the subject; and Mr. Madison, in his message in 1816, thus refers to it:—"Congress will bear in mind that no adequate provision has yet been made for the uniformity of weights and measures, also contemplated by the constitution. The great utility of a standard fixed in its nature, and founded on the easy rule of decimal proportions, is sufficiently obvious. It led the government at an early stage to adopt preparatory steps for introducing it, and a completion of the work will be a just title to public gratitude." Mr. John Quincy Adams was called upon by the Senate for a report on the subject; and in 1821 he produced his celebrated and elaborate historical examination of the subject, embracing in the conclusion some general propositions which afterwards served as the basis of legislative action. In 1832, Mr. M'Lean presented to the Senate a very able and scientific report from Mr. Hassler, of the Coast Survey, on the standards to be used by government for enforcing the uniformity in the weights and measures in use.

It may not be out of place to suggest that should such scientific commission agree upon any system intended for general introduction,

its adoption might be greatly promoted by allowing a certain reduction on the duties to be paid upon articles which were invoiced according to the proposed system.

Renewing, therefore, their suggestion of an appropriate memorial to Congress, your committee respectfully submit their report.

ARCHIBALD RUSSELL,
HENRY V. POOR,
W. COVENTRY H. WADDELL, } *Committee.*

After some discussion, in the course of which it was suggested by the President that the memorial to Congress should allude to the importance of determining a common meridian of longitude, the report was accepted.

Mr. Leavitt advocated the recommendation of the report, and the same was accepted.

It was then moved that the subject of the report be referred to the Trustees of the Society to prepare a memorial, which after having received the signatures of the officers of the Society, should be transmitted to Congress.

Mr. Waddell of the committee to whom was referred the subject of the census, submitted a report; whereupon it was ordered that the subject be referred to the Trustees of the Society.

Mr. Poor on behalf of the committee on the subject of a map now in process of construction on that portion of the United States to be traversed by the proposed lines of railroads to the Pacific, submitted a report, and offered the following resolution:

Resolved, That the committee to whom the subject was referred, be authorized to contract for a draft of said map, provided the cost of the same shall not exceed the sum of two hundred dollars; and provided said sum can be raised without creating a charge upon the funds of the Society.

Which resolution was unanimously adopted. Adjourned.

Meeting, Feb. 14th, 1854; the Hon. GEORGE BANCROFT, President, in the chair.

The following gentlemen having been recommended by the

Trustees, were unanimously elected members of the Society; viz. Cyrus Curtis, Edward F. Davison, Gustavus H. Witthaus, Rudolph A. Witthaus, Augustus M. Lawrence, W. W. Leland, Esqs. and Major William D. Fraser.

The Society then proceeded to the election of officers for the ensuing year, and the following gentlemen were unanimously elected; viz.

President.—Hon. GEORGE BANCROFT, LL. D.
First Vice-President.—Henry Grinnell, Esq.
Second Vice-President.—Francis L. Hawks, D. D. LL. D.
Third Vice-President.—John C. Zimmermann, sen., Esq.
Treasurer.—Ridley Watts, Esq.
Recording Secretary.—M. Dudley Bean, Esq.
Foreign Corresponding Secretary.—S. Dewitt Bloodgood, Esq.
Domestic Corresponding Secretary.—Archibald Russell, Esq.
Librarian.—Rev. Joshua Leavitt, D. D.
Trustees.—Alexander W. Bradford, Alex. J. Cotheal, J. Calvin Smith, Hiram Barney, John Jay, Henry V. Poor, Edmund Blunt, Luther B. Wyman, Cambridge Livingston, Wm. Coventry H. Waddell, Esqs.

Mr. Jay then offered the following resolution.

Resolved, That the President of the Society be requested to address a note to the governor of each State, transmitting the constitution and proceedings of the Society so far as they have been published, and requesting of the executives of the respective legislatures, copies of all geographical and statistical documents printed by their authority, to be preserved in the archives of the Society.

Which resolution was referred to the Trustees. Adjourned.

Meeting, 21st February, 1854; the Hon. George Bancroft, President, in the chair.

The Society being convened to hear the annual address by

Lieut. M. F. Maury, LL. D., the usual business was dispensed with. At the conclusion of the address it was,

Resolved, That the thanks of the Society be tendered to Lieut. Maury for his address, and that a copy be requested for the Bulletin of the Society.

The Trustees submitted the following memorial to the Legislature of the State of New York, on the subject of the next census; which was adopted and ordered to be signed and transmitted, to wit:

MEMORIAL

OF THE AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY.

To the Legislature of the State of New York:

The memorial of the American Geographical and Statistical Society respectfully sheweth:

That, by constitutional provisions, a census of the State of New York must be taken in 1855. Although we have not yet reached that period, it is most respectfully suggested, that it would be highly desirable to take measures to have the preparation necessary for so important a work undertaken without delay. The attention of the Legislature is therefore invited to it.

The general intelligence which pervades the community, and the absence of any causes for concealment on the part of our citizens, would seem to offer every facility for an accurate enumeration of our population, and a satisfactory survey of the resources of the State.

It is a cause of much regret, that hitherto the efforts made by this State, to effect these ends, have not been more successful, and that the bulky volumes produced have not been more replete with accurate and useful information.

It is no part of the duty or intention of your memorialists, to depreciate the attempts which were made in 1835, or 1845; but a simple inspection of the returns, and an examination of the results, as compared with the known condition of the country, will only prove too clearly that they were exceedingly defective.

Your memorialists, in bringing the subject before the notice of the Legislature, are desirous of stating the importance of some action on the matter, during the present session of the Legislature, and of suggesting its reference to some suitable executive officer, clothed with the requisite authority.

If not now acted on, very little time will be left for the preparatory

work which must be perfected before the census can be taken, after the passage of the act, next winter.

The time considered most suitable for taking the census, has hitherto been in the summer season; and if it be remembered that sixty days do not elapse from the rising of the Legislature to the commencement of that season, it is obvious that the time is too short for the work to be carefully done, or maturely considered. If the summer season is allowed to advance, before the taking of the census is commenced, the annual migration of our citizens into the country, from the city, will have taken place, and very materially vitiate the accuracy of the returns.

June is recommended as the most suitable month, both as regards the climate and travelling facilities to the enumerators, and as regards the permanent condition of the population. If the month of June be the most suitable period, the interval from the adjournment of the Legislature is too short for the due preparation of this important work.

When it is considered that preparation has to be made for the enumeration of the entire population of this State, amounting to nearly three millions, it is evident that very ample preparation is required. In the recent publication of the United States census for 1850, there are some statements which may be valuable, as illustrative of a preparation required for a census. The population of the State of New York is a little more than an eighth of that of the whole of the Union, and therefore, by dividing the quantity of materials required for the United States census by eight, we have an approximate means of estimating the quantity required for this State. By this rule, the schedules for New York would amount to 80,000 pages; making about 375 reams of paper, weighing about 12 tons.

Your memorialists hope that a more condensed system may be followed, but these figures show the magnitude of the work, and the impossibility of preparing the schedules, perfecting the arrangements, and procuring the paper and printing the schedules, in the brief space of sixty days.

Should this Legislature, therefore, consider that it is desirable to make the necessary provision for the census to be taken in 1855, at the present session, your memorialists beg leave respectfully to make a few suggestions upon the principles upon which this great national work should be undertaken.

As no system can be properly harmonized unless it be left to the control of some efficient officer, it is most respectfully suggested that upon the Secretary of State, or some one appointed by him, should rest the responsibility of making the arrangements and of carrying out, into detail and practice, the measures necessary for a full and perfect census of the country.

In view of such a reference, or in the appointment, by the Governor, of an officer specially charged with these duties, it would be important for the Legislature to provide the outline of the machinery to be employed, the nature and extent of the statistical information to be sought

and an appropriation adequate to the necessary preliminary expenditures.

1. The machinery, (i. e., class of persons) to be employed.

In England it has been customary to take the census of the entire population in one day; and if by any arrangement the same result can be attained here, it would be desirable. The superintendent of the United States census of 1850, complains that "the districts embraced by each enumeration were too large;" and your memorialists would suggest, that this State possesses a subdivision admirably adapted to the end in view, and which has never yet been employed for the purpose, viz., the common-school districts. There are 12,000 school districts in the State, the average size of each being about four square miles. If therefore there is an available machinery which can be brought to bear upon each district, we have it sufficiently subdivided. Already the trustees of each district are required to make annual returns of the number of children between the ages of 5 and 21; and that duty has generally been satisfactorily performed. It is the same machinery which your memorialists propose should be employed in the census; and the following is the outline of a scheme.

Let the census be taken by the trustees or some one appointed by them, according to suitable regulations, on some designated day, say first Tuesday in June: as each district will contain on an average less than 250 persons, and as these would all be known to the enumerator, it might easily be accomplished in a day. During the remainder of the week let the returns be exhibited in the school houses, or at the residence of one of the trustees, for inspection or correction; and as the facts recorded are known in the neighborhood, no glaring error would escape detection. On the second Tuesday in the month, let the town superintendent go round and obtain the whole returns in his district, with power to have any district immediately taken where the trustees had omitted to do so. Let the town superintendent have all the returns copied, and transmit the original to Albany, and the copy to the county clerk for preservation. All this might be accomplished if it was properly arranged, by the end of the month of June; and before the legislature meet in January, 1856, the full returns might be arranged and printed.

The details of the plan are purposely omitted, as out of place in this memorial; but it is believed that suggestions could be made obviating any objection which may arise, as to the want of adaptation to cities, the incompetency of some of the trustees, the uncertainty of some school-district limits, &c., &c. But a fuller detail is reserved until it may be requested by a committee of the legislature, or executive officer.

2. Nature and extent of statistical information.

This must be left mainly to the judgment of the executive officer entrusted with the taking of the census. The evil hitherto has been, that too much information and detail was required, without sufficiently guarding the accuracy of the returns. No more information should be

collected than the remuneration to the census-taker will amply warrant, and none which is with difficulty ascertained. Within the last few years a great deal of attention has been bestowed in this country and abroad, upon the most eligible form of arranging the schedules; and ample materials now exist, from which to determine the most expedient method to be adopted.

3. The appropriation adequate to the necessary preliminary expenditures.

It is worthy of consideration whether the sums required for the payment of the census-takers, should not be raised and paid under the authority of the supervisors of each county; leaving the State from its general treasury to bear only the expenses of superintendence, ultimate arrangement, paper, and printing. All these are matters of detail, which your memorialists desire at present only to refer to, without discussing.

Such are the circumstances under which your memorialists address your honorable body. Interested in the pursuit of statistical knowledge, they see an opportunity of extending greatly the data for future deductions, and the elucidation of political principles; and therefore are induced to present this memorial. They address themselves to no political party, seek no personal end from their advocacy of this subject; and urge as an argument in favor of the scheme now briefly suggested, that it will not increase in any way political management, as the agents which it is proposed to employ are already in office.

All of which is respectfully submitted.

Adjourned.

Meeting, March 14th, 1854; the Hon. GEORGE BANCROFT, President, in the chair.

The following gentlemen having been recommended by the Trustees, were unanimously elected members of the Society: Hon. Hamilton Fish, Lewis M. Rutherfurd, Robert L. Kennedy, Wm. H. Webb, John C. Burrill, Charles Moran, Wm. J. McAlpine, and E. Merriam, Esqs., and Robert Watts, M. D.

Capt. Gibson read a paper on the East Indian Archipelago; whereupon the thanks of the Society were tendered to Capt. Gibson for his paper. Adjourned.

Meeting, April 11th, 1854; Hon. GEORGE BANCROFT, President, in the chair.

The following gentlemen having been recommended by

the Trustees, were elected members of the Society: Hon. A. Bruyn Hasbrouck, Alex. H. Stevens, M. D., Capt. E. E. Morgan; and George Schoeter, Henry F. Sewell, Charles Ely, and E. W. Griffin, Esquires.

Mr. Russell, of the committee on procuring a Charter by special enactment of the legislature, reported favorably in reference to the same.

Dr. Hawks, from the committee on the publication of the Bulletin, reported progress.

Collections of the Georgia Historical Society were received.

Whereupon it was ordered that the thanks of the Society be returned to the Georgia Historical Society.

Mr. Livingston read a paper upon Natal, descriptive of the country, and its inhabitants, by Rev. H. Aulden, Missionary of the A. B. C. F. M.

On motion of Dr. Hawks, it was

Resolved, That the thanks of the Society be returned to the author, and that a copy be requested for its archives.

Mr. Bloodgood presented to the Society a map, being the donation of Mr. George B. Watts, of Carthagena.

Whereupon it was ordered, that the thanks of the Society be given to Mr. Watts. Adjourned.

Meeting, May 4th, 1854; Dr. Hawks, Vice-President, in the chair.

The Treasurer made report, showing one hundred and ten dollars ninety-one cents in the Treasury; which on motion was approved.

Dr. Hawks laid before the Society, a copy of a Charter recently obtained from the legislature of the State of New York, and thereupon submitted the following Preamble and Resolutions:—

Whereas, On the 22d day of May, 1852, the American Geographical and Statistical Society, became incorporated under the General Act of the State of New York for that purpose made and

provided; and, *Whereas*, the said Society has continued to act under the certificate of incorporation obtained thereby; having always in view the accomplishment of their desire, to obtain a Special Act of incorporation from the State of New York; and, *Whereas*, sundry of the members of said incorporation, for the furtherance of its objects applied to the legislature of the State of New York, praying for the incorporation of said Society, and obtained an Act, of which the following is a copy :—

"AN ACT TO INCORPORATE THE AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY."—Passed April 13, 1854.

"*The People of the State of New York, Represented in Senate and Assembly, do enact as follows.*

"§ 1. George Bancroft, Henry Grinnell, Francis L. Hawks, John C. Zimmermann, Archibald Russell, Joshua Leavitt, William C. H. Waddell, Ridley Watts, S. DeWitt Bloodgood, M. Dudley Bean, Hiram Barney, Alexander J. Cotheal, Luther B. Wyman, John Jay, J. Calvin Smith, Henry V. Poor, Cambridge Livingston, Edmund Blunt, Alexander W. Bradford and their associates, who are now or may become hereafter associated for the purposes of this act, are hereby constituted a body corporate by the name of the American Geographical and Statistical Society, for the purpose of collecting and diffusing geographical and statistical information.

"§ 2. For the purposes aforesaid the said society shall possess the general powers and privileges, and be subject to the general liabilities contained in the third title of the eighteenth chapter of the first part of the revised statutes, so far as the same may be applicable and may not have been modified or repealed; but the real and personal estate which the said society shall be authorized to take, hold, and convey, over and above its library, maps, charts, instruments and collections, shall not at any time exceed an amount, the clear yearly income of which, shall be ten thousand dollars.

"§ 3. The officers of the said society shall be a President, three vice-presidents, a corresponding secretary, a recording secretary, a librarian and treasurer, and such other officers as may from time to time be provided for by the by-laws of said society.

"§ 4. The said society, for fixing the terms of admission of its members, for the government of the same, for changing and altering the officers above named, and for the general regulation and management of its transactions and affairs, shall have power to form a code of by-laws not inconsistent with the laws of this State or of the United States, which code, when formed and adopted at a regular meeting, shall, until

modified or rescinded, be equally binding as this act upon the said society, its officers and its members.

"§ 5. The legislature may at any time alter or repeal this act.

"§ 6. This act shall take effect immediately."

And, *Whereas*, It appears to be expedient, that the original organization under the general act above referred to, shall cease, and the Society proceed to organize under the Act passed for that purpose: Therefore, be it

Resolved, That the American Geographical and Statistical Society, do now proceed to organize under the special act aforesaid.

Resolved, That the American Geographical and Statistical Society, do hereby accept the said Act as our Charter of Incorporation.

Resolved, That we do now proceed to the election of a council and officers thereof for the ensuing year, and the adoption of a code of By-Laws for the government of the same.

Resolved, That the Society, as now organized, do hereby ratify and assume all the obligations which the Society under the general act incurred, and assume the possession of all the property of the Society remaining in possession of its several officers, and all debts and dues owing to the Society aforesaid.

Which preamble and resolutions were unanimously adopted.

A motion was then made, by Mr. Disturnell, that the existing By-Laws be in force till the next meeting of the Society; which was adopted.

A motion was then made, that a committee be appointed to nominate suitable persons as officers of the Society; and Messrs. Poor, Russell, and Barney were appointed such committee.

The presiding officer then introduced to the Society Mr. Watts, who read a paper, on "Our Inter-Oceanic Communications across the Isthmus of Panama or Darien,"—at the conclusion of which it was

Ordered, That the thanks of the Society be tendered to Mr. Watts for his paper, and that a copy be requested for the archives of the Society.

The presiding officer then introduced to the Society, his

Excellency, Isaac I. Stevens, Governor of Washington Territory, who addressed the Society on the subject of his survey of the northern route for the Pacific Railroad; and on motion the thanks of the Society were tendered to Gov. Stevens for his interesting address. Adjourned.

At the *First Meeting of* the American Geographical and Statistical Society, under the charter recently granted by the legislature of the State, especially convened to complete the organization, to elect officers, and to transact other business, Thursday evening, May 11th, 1854; Hon. George Bancroft in the chair.

The minutes of the last meeting were read and approved.

Mr. Russell, of the committee on the subject of By-Laws, reported a code, which, on motion of Mr. Waddell, was unanimously adopted.

The Society then proceeded to the election of officers. Mr. Disturnell and Mr. Livingston were appointed tellers; and the following gentlemen were unanimously elected:

President.—Hon. GEORGE BANCROFT, LL. D.

First Vice-President.—Henry Grinnell, Esq.

Second Vice-President.—Francis L. Hawks, D. D. LL. D.

Third Vice-President.—John C. Zimmermann, Sen., Esq.

Treasurer.—Ridley Watts, Esq.

Recording Secretary.—M. Dudley Bean, Esq.

Foreign Corresponding Secretary.—S. Dewitt Bloodgood, Esq.

Domestic Corresponding Secretary.—Archibald Russell, Esq.

Librarian.—Henry V. Poor, Esq.

Council.—Wm. Coventry H. Waddell, Alexander J. Cotheal, J. Calvin Smith, Hiram Barney, John Jay, J. Romeyn Brodhead, Edmund Blunt, Alexander M. Bradford, and Cambridge Livingston, Esqs. Adjourned.

Meeting, June 1st, 1854; Dr. Hawks, Vice-President, in the chair.

On recommendation of Council, the following gentlemen were duly elected members of the Society: M. G. Hart, Benson J. Lossing, Mathew Mitchell, Augustus H. Ward, and Cyrus W. Field, Esquires, as ordinary members; and Gov. Isaac I. Stevens, Benj. M. Norman, E. G. Squires, and George B. Watts, Esqs., as corresponding members.

Mr. Henry V. Poor read a paper on the subject of the proposed Railroads from the Atlantic to the Pacific Ocean; and upon motion it was resolved, that the thanks of the Society be tendered to Mr. Poor for his paper, and that a copy be requested for the archives of the Society. Adjourned.

Meeting, Oct. 5th, 1854; Hon. GEORGE BANCROFT, President, in the chair.

Several donations were received, and the thanks of the Society voted to the donors. Adjourned.

Meeting, Nov. 2d, 1854; Hon. GEORGE BANCROFT, President, in the chair.

The Secretary of the Council reported the names of the following gentlemen, as recommended for election at the last meeting of the Council: Hon. John A. Rockwell, Rev. Francis Vinton, D. D., Marshall Lefferts, Sidney E. Morse, Thomas Tileston, and John A. Appleton, Esq., as ordinary members; and Hon. Charles Mason, Wm. Henry Duncan, Aaron H. Palmer, Esqs. and Hon. Robert McClelland, as corresponding members; who were thereupon declared duly elected members of the Society.

Mr. Russell, from the Committee appointed to examine and report on the first part of Johnson's Physical Atlas, reported; and proposed the name of the distinguished author as a corresponding member of the Society; when, on motion, the report was unanimously accepted.

The Recording Secretary then read a communication from

Maj. R. Lachlan, of Montreal, accompanying a copy of two papers read before the Canadian Institute; whereupon Dr. Hawks moved, that the thanks of the Society be presented to Major Lachlan for his valuable contributions, and proposed the name of Maj. Lachlan as a corresponding member of the Society, which was unanimously approved.

Mr. Bloodgood offered the following resolution, viz. :—

Resolved, That a Committee of three be appointed to report, at an early day, to the Society the expediency of obtaining for its use, barometers, thermometers, hygrometers, at a cost not to exceed in the whole the sum of seventy-five dollars (for the purpose of obtaining daily meteorological observations at the rooms of the Society); and also, to report the best means of raising the necessary funds for carrying out the objects of this resolution.

Mr. Wm. Coventry H. Waddell then read a paper on the geography and statistics of northern New York; whereupon, on motion, it was,

Ordered, that the thanks of the Society be tendered to Mr. Waddell for his paper, and that a copy be requested for the archives of the Society. Adjourned.

Meeting, Dec. 7th, 1855; Hon. GEORGE BANCROFT, President, in the chair.

The following persons, recommended by the Council, were elected as ordinary members: Samuel Wetmore, George W. Colton, J. W. Calvert, Esqs., Charles King, LL. D., Hon. Samuel B. Ruggles, and Lieut. Viele, U. S. A.; and as corresponding members, Mrs. Somerville, of England, and Miss Sophia S. Cornell, of New York.

The Treasurer submitted his report; from which it appeared that the receipts into the Treasury for the preceding year, had been,	$1,736 34
Payments, - - -	1,710 31
Showing balance in the Treasury, of -	$26 03

The following gentlemen, having been recommended by the Trustees, were elected members of the Society: S.

Hastings Grant, Esq., as an ordinary member; and Daniel O. Gilman and Mr. Charles W. Cook, Esqs., of San Francisco, Cal., as corresponding members.

Mr. Barney presented the following resolution, to wit:

Resolved, That the President of this Society be requested to prepare a petition, to be signed by its officers, praying Congress to instruct and empower the Secretary of the Navy to fit out an expedition, consisting of a propeller and a store-ship, fully officered, manned and equipped, to search for and relieve Commander Kane and his party, who were detailed by the United States government, in the spring of 1853, to make scientific and geographical explorations within the Arctic region, and whose absence is prolonged beyond the anticipated term.

Which was unanimously adopted.

Mr. Bloodgood then offered the following resolution:—

Whereas, The many recent and fatal disasters by shipwreck on the coast of New York and New Jersey, have excited the deepest interest and sympathy in the public mind; and as the life-saving establishment and stations now existing under the patronage of the merchants of this city, and of Congress, are not organized under a general and responsible head,—

Resolved, That the Society respectfully memorialize the honorable the Secretary of the Treasury, in favor of the appointment of a general agent who shall have the supervision and control of the life-saving establishment, under the instruction of the Department, in order that the system may be thoroughly organized, not only for the sake of humanity and for the interests of commerce, but also for the purpose of obtaining facts, estimates, and tables important in their connection with the subject of commercial statistics.

On motion of Mr. Russell, the resolution was referred to Council.

The Corresponding Secretary stated, that he had had a correspondence with the Hon. George Bancroft, President of the Society, to ascertain whether Mr. Bancroft would consent to serve again as President of the Society; that Mr. Bancroft stated, that he was "sensible of the great honor that had been done him, but that he thought it right to make way for a successor; to which conclusion he was led by public and personal motives. That he should be absent

from New York a great deal during the next year; and that he was persuaded that some rotation in the office of President was of vital importance to the institution."

On motion, the chair appointed as a committee to nominate officers for the ensuing year,—Messrs. Waddell, Barney, and Watts; who having reported, the Society proceeded to the election of officers, Messrs. Disturnell and Waddell being appointed tellers, who announced the following result.

President.—FRANCIS L. HAWKS, D. D., LL. D.

Vice-Presidents.—HENRY GRINNELL, Esq. MATHEW F. MAURY, LL. D., U. S. N.; ALEXANDER W. BRADFORD, Esq.

Treasurer.—RIDLEY WATTS, Esq.

Recording Secretary.—ARCHIBALD RUSSELL, Esq.

Foreign Corresponding Secretary.—S. DEWITT BLOODGOOD, Esq.

Domestic Corresponding Secretary.—H. V. POOR, Esq.

Council.—J. ROMEYN BRODHEAD, HENRY E. PIERREPONT, HIRAM BARNEY, JOHN D. JONES, CAMBRIDGE LIVINGSTON, JOHN JAY, WM. COVENTRY H. WADDELL, MARSHALL LEFFERTS, and RUDOLPH A. WITTHAUS, Esqs.

Mr. Poor then offered the following resolution:—

Resolved, That the Hon. George Bancroft having declined a re-election as President of the American Geographical and Statistical Society, the Society highly appreciate his valuable labors in their behalf, and unanimously tender their thanks for the able, dignified, and very satisfactory manner in which he has presided over their deliberations.

Which resolution was unanimously adopted.

Mr. J. S. Kohl was then introduced to the Society, and read a paper (illustrated by a chronologically arranged collections of maps) upon the progress of geographical science and chartography, from the Middle Ages up to the present time.

At the conclusion of which, on motion, the Society adjourned to Thursday next, to hear a second paper upon the same subject. Adjourned.

Meeting, January 4th, 1855; Rev. Dr. HAWKS, President, in the chair.

The President stated that the memorial to Congress relative to Dr. Kane was prepared; and, the same having received the signatures of the officers of the Society, it was ordered that it be transmitted to Congress.

The following gentlemen were then unanimously elected members of the Society, to wit: Frederick A. Conkling, Edward Kearney, A. C. Morton, and W. W. Fosdick, Esqs., as ordinary members; and Professor Guyot of Princeton, N. J., Professor Henry D. Rogers of Boston, and Hon. E. W. Leavenworth, Secretary of State of New York, as corresponding members.

Mr. Disturnell then made some remarks on Commander Ringold's willingness to make a communication to the Society; which was referred to the Committee on Topics and Proceedings.

Mr. Disturnell then moved the following resolution, which, on motion was referred to the Committee on Library and Finance.

Resolved, That the American Geographical and Statistical Society recommends, that the sum of dollars be raised by subscription from its members to procure portraits of the several presidents of said Society, commencing with the first president.

The President then stated to the Society, that the State Officers at Albany had made a liberal donation to the Society, consisting of fifty copies of the Colonial History of the State of New York, for distribution and exchange. Whereupon the thanks of the Society were unanimously directed to be returned to his Excellency the Governor, the Hon. Secretary of State, and the Hon. the Comptroller of the State, therefor.

The Annual Address, by Francis L. Hawks, D. D., LL. D., President of the Society, was then read. Adjourned.

Meeting of the Society, January 11th, 1855; the President, Dr. HAWKS, in the chair.

The Librarian reported the donation by the author, of L'His-

toire de l'Amérique Méridionale au Seizieme Siècle," par Paul Chaix. The thanks of the Society were directed to be returned to the donor.

The President then introduced to the Society Mr. G. E. Waring, Jr., who read a paper on the statistics of agriculture. On motion of Mr. Livingston, the thanks of the Society were voted to Mr. Waring, and a copy of the paper requested for the archives of the Society.

On motion of Mr. Brodhead, that portion of the paper of Mr. Waring relating to impoverishment of soils through unsystematic agriculture, was referred to the Committee on Topics and Proceedings.

Mr. Waring was then proposed as a corresponding member. Adjourned.

At a meeting held January 18th, 1855; the President, Dr. HAWKS, in the chair.

Mr. Bancroft communicated to the Society a paper of Mr. Parker of Burlington, N. J., containing a vocabulary of the languages of the Camanches and other Indian tribes in Texas; for which the thanks of the Society were duly tendered.

Mr. Disturnell presented a copy of the Gadsden Treaty, with a map; the thanks of the Society were directed to be returned.

Lieut. Viele then read a paper on the topography of Southern Texas and of the Rio Grande. On motion of Dr. King, President of Columbia College, it was

Ordered, That the thanks of the Society be tendered to Lieut. Viele for his paper, and a copy of the same requested for its archives. Adjourned.

Meeting, January 25th, 1855; the President, Dr. HAWKS, in the chair.

The following gentlemen were elected members of the Society: as ordinary members, viz., George E. Squire, Theodore

A. Tellkampf, William H. Allen, Henry A. Oakley, William W. Wright, Bradish Johnson, W. V. Brady, T. F. Harrison, James Green, J. H. Pullen, Esqs.; as corresponding members, Thomas J. Green, and George E. Waring.

The Chair announced the following donations from Hon. F. B. Cutting, to wit: A Compendium of the Census, 1850; Coast Survey Reports, 1850; and also several works on engineering from Col. Totten, U. S. A.,—which were duly acknowledged.

Dr. Hawks read a paper, prepared by Mr. Geo. Schroeter,, on Forests and their distribution and influence; whereupon the thanks of the Society were tendered to Mr. Schroeter, and a copy of his paper requested for the archives of the Society. Adjourned.

Meeting, February 1st, 1855; the President, Dr. Hawks, in the chair.

The following gentlemen were, on recommendation of the Council, elected members of the Society; J. Winthrop Chanler, jun., Henry K. Bogert, Francis Tomes, jun., J. Hastings Grant, and Samuel T. Skidmore, Esqs.

Dr. Hawks then read a paper on the aboriginal languages of this continent; whereupon the thanks of the Society were returned to him, and a copy of it requested for the archives of the Society. Adjourned.

Meeting, February 8th, 1855; the President, Dr. Hawks, in the chair.

The following gentlemen were, on recommendation of the Council, elected ordinary members: viz. Messrs. Joseph Bloodgood Frost, Benjamin R. Winthrop, Rev. Lot Jones, Robert L. Stuart, and Robert W. Rutherfurd, Esqs.

Mr. Latson then made some remarks upon the information possessed by him of a vast deposit of Rock Salt in the southern portion of Utah, and offered to prepare a paper on this subject; which was referred to the Committee on Topics and Proceedings, with power.

Lieut. Bartlett, U. S. N., read a paper on Lighthouses and their recent improvements; whereupon the thanks of the Society were tendered to Lieut. Bartlett, and a copy of his paper requested for the archives of the Society. Adjourned.

At a meeting, February 15th, 1855, the President, Dr. HAWKS, in the chair,

Mr. Disturnell gave a brief sketch of the newly-published report on the Pacific Railroad exploring expeditions.

Dr. Hawks then read the paper prepared by Miss Sarah S. Cornell, of New York, on Lieut. Gibbon's Report on the Exploring Expedition on the Rivers Madeira and Amazon; whereupon the thanks of the Society were returned to Miss Cornell.

Rev. Samuel Osgood, D. D., John Wendell, Peter Cooper, G. A. Pell, George A. Hearn, Daniel A. Robertson, of St. Paul, Min., Esqs., and Hon. Charles P. Daly, were, on recommendation of the Council, elected ordinary members of the Society. Adjourned.

Meeting, February 23d, 1855; the President, Dr. HAWKS, in the chair.

John T. Johnston, Esq., was elected an ordinary member on recommendation of the Council; and John T. Meehan and Ashbury Dickens, Esqs., both of Washington, and Hon. William H. Seward, of Auburn, N. Y., were elected corresponding members.

The Rev. Joseph P. Thompson, D.D. read a paper on the "Dead Sea," and the recent explorations thereof; whereupon the thanks of the Society were tendered to Dr. Thompson for his paper, and a copy thereof requested for the archives of the Society. Adjourned.

Meeting, March 1st, 1855; the President, Dr. HAWKS, in the chair.

The Rev. Calvin Colton read a paper on the future of

America: whereupon the thanks of the Society were tendered to Mr. Colton for his paper, and a copy thereof requested for the archives of the Society. Adjourned.

Meeting, March 8th, 1855; Henry Grinnell, Esq., Vice-President, in the chair.

Mr. S. S. Randall, Superintendent of Common Schools for the city of New York, read a paper on the Common-School System of the State of New York; whereupon the thanks of the Society were tendered to Mr. Randall, and a copy of his paper requested for the archives of the Society. Adjourned.

Meeting, March 15th, 1855; the President, Dr. HAWKS, in the chair.

Mr. Tappan, of the Michigan University, read a paper on the growth of cities; whereupon the thanks of the Society were presented to Chancellor Tappan, and a copy of his paper requested for the archives of the Society. Adjourned.

Meeting held March 22d, 1855; the President, Dr. HAWKS, in the chair.

The President read some extracts from an account, published in California, of some ruins of cities said to have been discovered by Mormon explorers, near the boundary of New Mexico.

The President also read a number of letters furnished by Mr. Grinnell, from Mr. Barrow, Capt. Inglefield, and other English travelers and Arctic explorers, exhibiting great interest in the projected expedition for the relief of Dr. Kane.

Messrs Bloodgood, Poor, and others, made some remarks on the Rio Atrato and Mr. Trautwine's recent survey of it. Adjourned.

Meeting, March 29th, 1855; the President, Dr. HAWKS, in the chair.

Mr. Bean presented to the Society, as a donation from Capt. Stephen Hook, of Glen Park, a Maritime Atlas; for which the thanks of the Society were returned to the donor.

The paper of Geo. B. Watts, on the Isthmus of Darien, was read; the thanks of the Society were presented to Mr. Watts for his paper, and a copy thereof requested for the archives of the Society.

Mr. Russell called the attention of the Society to the subject of the proposed *census* of the State of New York, and submitted a course or plan upon which it should be taken. Adjourned.

Meeting held April 5th, 1855; the President, Dr. HAWKS, in the chair.

The Committee on Topics and Proceedings submitted the following report:

"The Committee on Topics and Proceedings, beg leave respectfully to report, that the series of monthly meetings which they arranged for the Society, have been concluded, and they have to congratulate the Society on the result. They present in this report the subjects which have week by week occupied the attention of the Society, and the names of the gentlemen who have furnished the several papers. A growing interest has been exhibited in the success of the Society, and the attendance has been steadily on the increase.

"It is the intention of the Committee, to make arrangements for a similar series of lectures next season, and they would earnestly request members of the Society to communicate with them on the subject, suggesting suitable topics for discussion, and the names of eligible persons to be invited to address the Society. Active co-operation among the members of a society in the early state of its career, is necessary to attain a successful result."

The following is a list of papers read:

January 4, 1855.		Annual Address, by Rev. Francis L. Hawks, D. D., LL. D.
" 11,	"	Statistics of Agriculture, by G. E. Waring, Jr., Esq.
" 18,	"	Topography of Southern Texas, by Lieut. E. L. Viele.
" 25,	"	Distribution of Forests and their influence, by Mr. G. Schroeter,
February 1,	"	Aboriginal Languages of America, by Dr. Hawks.
" 3,	"	Lighthouses and Recent Improvements in them, by Lieut. Bartlett, U. S. N.
" 15,	"	On Lieut. Gibbons' Report on the Amazon Expedition, by Miss Cornell.
" 23,	"	On the Dead Sea and the Recent Discoveries in that region, by Rev. Joseph P. Thompson, D. D.
March 1, 1855.		The Common School System of New York, by S. S. Randall, Superintendent of Common Schools for the city of New York.
" 15,	"	The Growth of Cities, by Henry P. Tappan, D. D., LL. D., Chancellor of the University of Michigan.
" 22,	"	Various Communications, by Mr. Grinnell, Gen. Thomas J. Green and others, on the Arctic Explorations and other topics.
" 29,	"	The Indian Tribes of Darien, by Mr. G. B. Watts.
April 5,	"	History and Statistics of the Post Office Department of the United States and Great Britain, by Mr. Pliny Miles.

The following gentlemen were, on recommendation of the Council, elected ordinary members, viz.: Edwards Pierrepont, Henry W. Dunshee and Wm. A. Brown, Esquires.

On motion of Mr. Russell, a committee was appointed by the Chair, to superintend and conduct the preparation of an

improved and corrected copy of the large map of the United States; and, on motion of Mr. Pierrepont, the President and Recording Secretary were added as *ex-officio* members to this committee, and the following gentlemen were appointed such committee; Messrs. Poor, Blunt and Pierrepont.

The Chair announced the reception of the following documents, viz. :—

Annual Address of the Royal Geographical Society of London; Memoirs and Transactions of the Royal Danish Academy of Copenhagen. The thanks of the Society were ordered to be returned to the several donors.

Mr. Pliny Miles read a paper on the Statistics and History of the United States Post Office Department; whereupon the thanks of the Society were tendered to Mr. Miles for his paper, and a copy of the same requested for the archives of the Society. Adjourned.

Meeting, May 3d, 1855; The President, Dr. Hawks, in the chair.

Mr. Russell directed the attention of the Society to the first two sheets of the new and improved Map of the United States.

Mr. Eugene Lawrence read a paper on "The World as known to the Ancients;" whereupon the thanks of the Society were tendered to Mr. Lawrence for his paper, and a copy of the same requested for the archives of the Society.

On motion of Mr. Russell, a Committee was appointed to confer with the Officers of the United States Expedition for the relief of Dr. Kane, with power to take all such steps as they may think proper; and the Chair named the following gentlemen as such Committee: Messrs. Henry Grinnell, H. V. Poor, A. Russell, H. E. Pierrepont, and A. W. Bradford. Adjourned.

Meeting, June 7th, 1855; Alexander W. Bradford, Esq., Vice-President, in the chair.

Jeremiah Coles, Esq., on the recommendation of the Council, was elected an ordinary member.

Mr. Disturnell presented to the Society the first two sheets

of a new and improved edition of Burr's County Map of the State of New York; and the thanks of the Society were voted to the donor.

The Secretary read some extracts from periodicals recently received from Europe. The Society then adjourned for the summer recess.

Meeting, Oct. 4th, 1855; the Rev. Dr. HAWKS, Prest., in the chair.

Mr. Russell, from the Committee on Foreign Correspondence and Exchange, reported progress.

The President laid on the table donations in books from Hon. Hamilton Fish, Hon. E. W. Leavenworth, Secretary of State of New York, and from the British Minister at Washington, on behalf of his government; whereupon it was ordered that the thanks of the Society be returned to the several donors.

Mr. Disturnell communicated a letter of E. Meriam, Esq., on the probable temperature of the last year in the Arctic region.

The Secretary read abstracts from late European periodicals. Adjourned.

Meeting, Nov. 1st, 1855; Henry Grinnell, Esq., Vice-President, in the chair.

The following gentlemen, on the recommendation of Council, were elected members: J. C. Ohlrick, Esq., Royal Inspector of North Greenland, as corresponding member; and Charles F. Dambmann, David E. Wheeler, and Benj. W. Bonney, Esqs., as ordinary members.

On recommendation of Council, it was ordered that weekly meetings of the Society be held on each Thursday evening, at 7½ o'clock. Adjourned.

Meeting, Thursday, Nov. 8th, 1855; Henry Grinnell, Esq., Vice-President, in the chair.

The Librarian reported the following donations: various Public Documents issued by the authority of the late legislature of the State of New York; Documentary History of the

State of New York; fifty copies of the 9th volume of the Colonial History of New York; and a printed volume entitled, "The Prison of Weltevreden," by Capt. W. M. Gibson. The thanks of the Society were ordered to be returned to the several donors.

Mr. Disturnell presented to the Society fifty copies of an Arctic Chart for distribution, a new Map of Wisconsin, and two sheets of the new edition of H. Burr's County Map of New York; whereupon the thanks of the Society were tendered to Mr. Disturnell.

Mr. Wm. W. Fosdick read a paper on the Rivers of the Earth; whereupon, on motion, it was—

Ordered that the thanks of the Society be tendered to Mr. Fosdick for his paper, and a copy of the same be requested for the archives of the Society. Adjourned.

Meeting, Nov. 15th, 1855, Rev. Dr. HAWKS, Prest. in the chair.

The chairman of the Committee on Topics and Proceedings reported progress.

Mr. Jay, from the Committee on Foreign Correspondence, reported progress.

On motion of Mr. Disturnell, it was—

Resolved, That a committee of three be appointed by the Chair, to memorialize the Legislature of New York upon the subject of a topographical survey; whereupon the Chair appointed Messrs. Viele, Jay, and Conkling such committee.

On motion, the Chair appointed a committee of three to nominate officers of the Society, for the ensuing year; viz.: Messrs. Pierrepont, Russell, and Poor.

The chairman communicated to the Society a letter of Mr. J. H. Colton, donating to the Society a copy of his Atlas; whereupon the thanks of the Society were presented to Mr. Colton; and on motion a committee was appointed, consisting of Messrs. Poor, Pierrepont, and Russell, to examine the Atlas, and report as to its merits. Adjourned.

Meeting, November 22d, 1855; in the absence of the President and Vice-Presidents, Hiram Barney, Esq., was called to the chair.

Mr. A. I. Cotheal presented to the Society a donation of Mr. L. Schadé, of Washington, D. C., being a pamphlet on the Emigration into the United States; whereupon the thanks of the Society were directed to be returned to Mr. Schadé.

Mr. Russell read an extract from Mr. Schadé's pamphlet, above referred to.

The Secretary read translations and compilations from foreign journals on the statistics of Russia.

Meeting, December 6th, 1855; Alexander W. Bradford, Esq., Vice-President, in the chair.

Upon the recommendation of Council, the following gentlemen were duly elected members of the Society; to wit: Dr. Richard S. Fisher, George Taylor, Pliny Miles, and Abram S. Hewitt, Esqs.

The Treasurer submitted his report; whereupon it was—

Resolved, That the Treasurer's Report be referred to the following gentlemen as an auditing committee; to wit: Messrs. Charles Congdon, Edward Kearney and Alexander I. Cotheal.

Mr. Waddell presented a letter, addressed to the presiding officer of the Society, from S. DeWitt Bloodgood, Esq., Foreign Corresponding Secretary, declining to be a candidate for re-election, and offering to read a paper before the Society, during the present season, if agreeable.

On motion, the annual election of officers for the Society, for the ensuing year, was entered upon. The Chair appointed as tellers, Messrs. Waddell and Disturnell.

The Tellers reported the following gentlemen duly elected:

President.—FRANCIS L. HAWKS, D. D., LL. D.

Vice-Presidents.—HENRY GRINNELL, ALEXANDER D. BACHE, and ALEXANDER W. BRADFORD, Esqs.

Treasurer.—RIDLEY WATTS, Esq.

Recording Secretary.—WILLIAM C. H. WADDELL, Esq.

Domestic Corresponding Secretary.—HENRY E. PIERREPONT, Esq.

Foreign Corresponding Secretary.—JOHN JAY, Esq.

Librarian.—J. CALVIN SMITH, Esq.

Council.—HIRAM BARNEY, THOS. J. HARRISON, M. DUDLEY BEAN, ARCHIBALD RUSSELL, HENRY V. POOR, CAMBRIDGE LIVINGSTON, MARSHALL LEFFERTS, RUDOLPH A. WITTHAUS, and F. A. CONKLING, Esqs.

General Mosquera made a statement on the physical geography of New Granada; whereupon, on motion of Mr. Barney, it was—

Resolved, That the thanks of the Society be presented to General Mosquera for his interesting remarks, and his offer to aid the Society by the transmission of documents upon geographical and statistical subjects.

Mr. Eugene Flandin then read a paper descriptive of the Province of Chiriqui; whereupon, on motion of Mr. Lefferts, it was

Resolved, That the thanks of the Society be tendered to Eugene Flandin, Esq., for his paper read to the Society this evening, and that a copy be requested for the archives of the Society.

Meeting, December 27th, 1855; Alexander W. Bradford Esq., Vice-President, in the chair.

Hugh N. Camp, Esq., recommended by Council, was elected an ordinary member of the Society.

After some complimentary remarks, by the Hon. George Bancroft, in reference to the successful results of the late Arctic Expedition under Dr. Kane, and expressing the desire of the Society that Dr. Kane would favor them with some of the incidents and results of his late expedition,—

Dr. Kane, in a very clear and forcible manner, laid before the Society many interesting details of the "Arctic Expedition," which elicited the warmest approbation from the members of the Society.

Upon the conclusion of his remarks, on motion of Mr. Conkling, it was

Resolved, That the thanks of the Society be tendered to Dr. Kane, for the statements with which he has favored the Society this evening, in reference to the Arctic Regions.

Meeting, January 3d, 1856; Henry Grinnell, Esq., Vice-President, in the Chair.

Mr. Russell from Council, presented the names of Herman B. Sears and Daniel Embury, as recommended by Council for membership; and these gentlemen were duly elected.

Mr. Barney presented several copies of the annual address (1855), of Mayor Hall of Brooklyn.

The Recording Secretary presented his resignation as Recording Secretary, and urgently requested its acceptance as a personal favor to him.

On motion of Mr. Lefferts, the same was laid on the table.

The Rev. J. M. Pease was introduced to the Society by Mr Russell, from the Committee on Topics and Proceedings, and made some remarks as to a proposed expedition in contemplation by him (under the auspices of the Society) to Africa. Upon the conclusion of his remarks, in reply to a question proposed to him, Mr. Pease remarked, that he "merely wished the moral support of this Society, without asking any pecuniary aid from this quarter;" that he would be "accompanied by several scientific persons, some of whom would be able and disposed to bear their own expenses; whilst the expenses of himself and others would be borne from the resources which had been tendered him, and on which he relied."

On motion of Mr. Lefferts, it was

Resolved, That the thanks of the Society be tendered to Mr. Pease for his remarks, and that the subject of his conversation with the Society be referred to Council; and that the Council report their action thereon to the Society.

Meeting, January 10th, 1856; in the absence of the Presidents and Vice-Presidents, Hiram Barney, Esq., in the chair.

The Report from the Council on the proposition of the Rev. J. Morris Pease, was, on motion of Mr. Russell, laid upon the table.

Mr. Pierrepont, from the Committee on Printing, made an oral report, summitting a proof sheet of a pamphlet containing the By-Laws of the Society. Whereupon, on motion, it was referred back to Council with direction to print.

Lieut. Viele, from the Committee appointed upon the subject of a Topographical Survey of the State of New York submitted the following Report, viz.:—

The Committee appointed by the resolution of the Society, to report on the expediency of memorializing the Legislature of the State of New York, upon the propriety of having a Topographical Survey made of that State, beg leave to submit the following

REPORT:

The subject of the resolution seemed, at first glance, to have a tendency to compromise the very general character of the Society, by apparently limiting the sphere of its influence to a particular State; whereas, its province is not only national, but it embraces by its name the Western Hemisphere. Nevertheless, the very great necessity for a correct physical map of the United States, is no less obvious to every intelligent citizen than to your Committee. Such map, it is not probable the general government will ever supply; rendering it incumbent upon the individual States to survey their respective territories, which has suggested to the Committee that upon each separate State the influence of the Society might, with propriety, be brought to bear.

It is not unknown to the Society that within the past century the principal governments of Europe have set on foot, and some of them have completed, elaborate surveys, which reflect high honor upon the governments themselves, and upon those who executed them.

The ordnance survey of England and topographical maps of France and Austria, as tributes to science and works of art, are marks of an enlightened progress, which must forever illustrate a distinct period in the history of these nations. The nature of a geodetic survey is such as, from its scope and expense, requires the patronage of government; but governments are not always the first to appreciate or to

encourage the efforts of science. In this respect it would not be just to compare our own government with the older nations of Europe.

We have during the past century been employed in redeeming a continent from the wilderness. Labor has been the watchword, and labor the necessity. While the hearts have yearned for knowledge, the hands have been hardened by toil.

Under such circumstances we are not to look for that degree of progress in science which we expect to find among an older people. Still, we can point with a just pride to the result, so far, of a Geodetic Survey of our coast. Based upon the purest principles of science, it has been conducted with fidelity and industry; and the hydrographic results which it has furnished are of inestimable value, not only to this country, but to the commerce of the world. In prosecuting its labors, it has laid, in every State into which its operations are extended, the basis of a Topographical Map. The value of this basis was so obvious to the State of New Jersey, that that State in the year 1854, by a legislative appropriation, organized a survey, which has since been prosecuted with vigor, and which, when completed, will give to the State a complete and accurate map in nowise inferior to the topographical maps of France. This map will give to the people of that State a perfect idea of its resources while as a consequence it serves to develop those resources, and to increase the value of land by showing its character; thus returning by its results the cost of its execution.

The very marked geological developments which occur in this country, and the vast mineral deposits which have been denied to scarcely any State of the Union, have led in many of the States to scientific examinations, more or less thorough, under the patronage of the State governments. While these examinations and explorations have in many instances exhibited extraordinary results, they have failed in a great measure to make those results of practical value, for the want of correct topographical maps, upon which to delineate the geographical formations and mineral deposits. This applies with great force to the recent geological survey of the State of New York.

This examination, authorized by the legislature, was commenced in 1836. Its results have not yet all been published. The cost of the whole investigation, into the natural history of the State, including printing, engraving, publishing, &c., has been estimated at $700,000. Yet a great part of it is incomprehensible to a large class of the people, from the fact that there is in existence no correct topographical map upon which could be delineated the results of these investigations. The most prominent features in all the maps of the State are the county divisions, which although very well in a political point of view, answer no other purpose. What the people want is a map which will show the relative value of the lands in different parts of the State, the cultivated and the uncultivated, the wooded and the cleared, the lengths and directions of the streams, and the extent of

the valleys they drain; the height and character of the hills and mountains; the geological formations to which they belong, and the mineral deposits which they contain. In short, such a map as will enable every citizen to know as much about the whole State as he does of his own immediate neighborhood. Such a map, while it would render available the investigations already made, would increase the value of those investigations in their correct delineations.

In view, therefore, of the great value and importance of such a survey to the State of New York; and in view of the fact that this State, which from its geographical position and commercial facilities, its extent and wealth, has naturally become the leading State of the Union, has always responded with a quick intelligence and a praiseworthy liberality to the appeals of science, and where the interest of its people are concerned has never hesitated to take the initiative; and in view, also, of inducing by her example the other States of the Union to follow the lead of New Jersey, your committee would recommend that a memorial be prepared and signed by the Officers of the Society, and presented through a Committee to the Legislature of the State of New York, asking that an appropriation be made for commencing a Geodetic and Topographical Survey of the State.

Signed,

EGBERT L. VIELE,
JOHN JAY,
F. A. CONKLING. } *Committee.*

Which Report was accepted, and on motion of Mr. Waddell it was

Resolved, That the said Committee be instructed to prepare a suitable memorial to the Legislature in conformity with their Report, and to submit the same to Council for action thereon.

The Hon. Horatio Seymour, after some complimentary remarks upon the action of the Society with reference to a Topographical Survey of the State of New York, presented his views upon the geographical features of the State, and their peculiar tendencies in advancing the State to its present elevated position in the Union.

On motion of Mr. Lefferts, it was

Resolved, That the thanks of the Society be tendered to Governor Seymour for his interesting remarks, and that a copy

of his views in writing be requested for the archives of the Society.

The Chairman, after presenting the thanks of the Society to Gov. Seymour, moved that the Report from Council on the proposition of the Rev. J. Morris Pease, to explore a portion of Western Africa, be taken from the table and read; which was adopted, and the Report was read by Mr. Lefferts from the Committee on the subject.

Whereupon, Mr. Conkling moved that the Report be laid on the table; which motion was amended on motion of Mr. Russell, viz.: That the said Report be referred to Council, with power to take such action upon the subject-matter thereof as to Council may seem fit and proper.

Which motion as amended was adopted, and the Society adjourned.

Meeting, January 17th, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

On Report from Council that Frederick G. Burnham, Esq., of New York had been nominated and approved as a member of the Society, he was duly elected an ordinary member. And Council recommending to the Society that the By-Laws of the Society should be so amended, as to provide for the appointment of an Assistant Recording Secretary, Mr. Waddell offered the following resolution:

Resolved, That the fourth article of the By-Laws be amended by adding after the word Librarian, the words "and an Assistant Recording Secretary, who shall be appointed by Council until elected at the annual election in 1855," which was, under the 15th section of the By-Laws of the Society, duly entered on the minutes, and laid over for the next regular meeting of the Society, on 24th January.

The Society then repaired to the large Chapel of the University, to listen to the "Annual Address" before the Society, by Professor A. D. Bache, Vice-President of the

Society, who read a paper upon the subject of the "Gulf Stream of the Atlantic Ocean, as developed by the coast survey of the Government of the United States.

Whereupon, on motion, it was

Resolved, That the thanks of the Society be tendered to Professor Bache for his interesting remarks, and that he be requested to furnish the Society with a copy of the same for their archives. Adjourned.

Meeting, January 24th, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

Mr. H. V. Poor was appointed Secretary *pro tem.*

The Resolution proposed at the last meeting, amendatory of the By-Laws, viz.: "That the fourth article of the By-Laws be amended, by adding after the word 'Librarian' the words, 'And an Assistant Recording Secretary,' who shall be appointed by Council until elected at the annual election in 1855,"—which was at the time proposed by Mr. Waddell, and duly entered on the minutes, was taken up.

Whereon, on motion of Mr. Poor, the same was duly considered and adopted as an amendment of the By-Laws, by an unanimous vote of all the members of the Society present.

On report from the Council, the following gentlemen, having been duly recommended and approved as members of the Society, viz.: David Codwise, T. P. Shaffner, W. H. Aspinwall, Charles H. Russell, Esqs., were elected ordinary members of the Society.

The Society then passed to the paper of the evening, being an account of the "Japanese Gulf Stream," by Lieut. Bent, U. S. N.

Upon the conclusion of Lieut. Bent's remarks, it was

Resolved, That the thanks of the Society be tendered to Lieut Bent, U. S. N., for his paper, and that a copy be requested for the archives of the Society. Adjourned.

Meeting, January 31st, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

The following gentlemen having been recommended by Council, were duly elected members of the Society: F. G. Foster, F. G. Thurston, Chas. W. Rockwell, Alfred Sears, Wilson G. Hunt, and Edward Cooper, Esqs., and Mr. Lewis Schadé as a corresponding member.

Mr. Pierrepont, on behalf of Capt. W. R. Palmer, U. S. N., presented to the Society three copies of the Report of the Coast Survey of the United States. Whereupon it was—

Ordered, That the thanks of the Society be returned to Capt. Palmer for his donation.

Mr. Russell presented a pamphlet on "International Coinage," by J. W. Alexander, Esq., of Baltimore. Whereupon it was—

Ordered, That the proper acknowledgments thereof be returned to the donor.

The Society then passed to the consideration of the paper of the evening, being a "Paper on Decimal Weights and Measures," by Mr. John H. Felton.

At the conclusion of Mr. Felton's remarks, on motion of Mr. Lefferts, it was

Resolved, That the thanks of the Society be presented to Mr. Felton for his paper, and that a copy of the same be requested for the archives of the Society.

Mr. Leavitt in seconding the vote of thanks, complimented Mr. Felton on his clear exposition of the subject, and urged the great advantages which would result to the country by the adoption of a Decimal System of Weights and Measures.

Mr. Jay stated that the same subject was entertained by the Society last year, and that a committee on its behalf had brought the matter before the Congress of the United States; in conclusion, he moved the following resolution:

Resolved, That a committee be appointed to bring the

subject of the importance of a Decimal System of Weights and Measures before Congress at its present session.

The resolution was, on motion of Mr. Russell, referred to Council, with power, for their action thereon.

Mr. Jay, from the Committee appointed by Council upon the subject of procuring accommodation for the Society in the Cooper Institute, made the following report, viz.:

The Committee appointed to communicate to Mr. Peter Cooper the Preamble and Resolutions of the Society, expressing their desire to procure accommodation, for the Society and its collection, in the Cooper Institute,

Respectfully report, that after communicating to Mr. Cooper the Resolution of the Society, and requesting the favor of an interview, the Committee by appointment waited on Mr. Cooper on Saturday last.

That Mr. Cooper, in the course of an interesting conversation in regard to the objects of the Institute, and the proposed occupation of the edifice, advised them that the library and collection of the Society might be deposited in the Institute as soon as it was sufficiently completed, which he thought would be within the present year, and that he would reserve for the Society, either at a low rent or free of rent, as he might hereafter determine, rooms for their own occupation, with the use of a lecture room for their public meetings. That he was unable at present to designate the apartments, or complete the arrangement in its particulars; but that the Society might rely upon his reserving for them the accommodations they had requested.

Your Committee, therefore, beg leave to recommend for adoption the following resolution:—

Resolved, That the thanks of the Society be returned to Peter Cooper, Esq., for his very prompt generosity, in granting to the Society the accommodation they may require in his new Institute; and that a copy of this resolution, together with the report of the Committee, be communicated to Mr. Cooper.

On motion the report was accepted, and the resolution adopted. Adjourned.

Meeting, February 14th, 1856; Rev. Dr. Hawks, President, in the chair.

A paper by Dr. Kane, on his late Arctic Expedition, was

read. Upon its conclusion, on motion of Mr. Pierrepont, it was—

Resolved, That the Secretary communicate the thanks of the Society to Dr. Kane for his paper, and that a copy of the same be requested for the archives of the Society. Adjourned.

Meeting, February 21, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

Upon the nomination of Council, the following gentlemen were duly elected members of the Society: Hon. Fernando Wood, A. Bleecker Neilson, Alfred Seton, Robert Kelly, and C. H. Dabney, Esqs.

Mr. Russell, from Council, submitted the following Report, viz.:—

That in Council the following resolution proposing an amendment to the By-Laws, was proposed by Mr. Jay, and adopted; and that it was then in Council,—

Resolved, That the Council recommend to the Society an amendment of the By-Laws of the Society, viz.: By adding to the third article of the By-Laws respecting annual dues, at the close of the article, the following clause:

"The Council may at any time by resolution remit the initiation and annual dues of any person, nominated as a member, who may be a clergyman, or professor in college, or who may have rendered services to the Society."

Mr. Abram S. Hewitt read a paper upon the "Statistics and Geography of Iron. Upon the conclusion of which, the Hon. Horatio Seymour offered the following resolution, which was unanimously adopted:—

Resolved, That the thanks of the Society be tendered to Mr. Hewitt for his paper read before the Society, and that a copy be requested for the archives of the Society. Adjourned.

Meeting, February 28th, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

Mr. Russell, from Council, proposed the name of Dudley B. Fuller, Esq., who was thereupon duly elected a member; Henry C. Carey, Esq., of Burlington, N. J., was proposed as an honorary member, by Mr. Conkling.

Mr. Jay read a letter from the British Minister, Mr. Crampton, dated Feb. 18th, 1856, at Washington, acknowledging the resolution of thanks tendered by the Society to the British government, for a donation of books recently made by that government.

Also a letter from John H. Caustin, Esq., Cousul-General of Chili, dated Washington, February 8th, 1856, communicating an extract from a dispatch from the Chilian government, expressing their desire to promote the objects of, and to exchange with, the Society, publications of a geographical and statistical character; also inclosing a list of official documents and statistical data, which had been already forwarded to the address of the Society.

The Librarian read a list of books and papers, recently received from various persons and societies, as follows:—

Report on the U. S. Astronomical Expedition to the Southern Hemisphere. One copy presented by Hon. Hamilton Fish, and one by Lieut Gillis, the author.

Report of the Secretary of the Interior on the Gadsden Treaty, with a map showing the new boundary. Presented by Senator Fish.

Vol. xxiv. of the Transactions of the Royal Geographical Society, London, received from the Royal Geographical Society.

Transactions of the Royal Academy of Sciences at Stockholm, 2 vols. Received from the Royal Academy.

Transactions of the Royal Academy of Sciences at Copenhagen, 2 vols. Received from the Royal Academy.

The following amendment of the By-Laws was taken from the table, and after being amended, on motion of Mr. Jay was adopted as follows:

Add in the third article of the By-Laws respecting annual dues at the close of the article, the clause, "The Council may at any time by resolution remit the initiation and annual dues of any person."

Adjourned.

Meeting, March 6th, 1856; Rev. Dr. Hawks, President, in the chair.

Mr. Russell, from Council, reported the names of the following gentlemen for election by the Society: U. A. Murdock, and Morris K. Jessup, Esquires, who were duly elected.

A paper by Commodore M. C. Perry, upon "Geographical Science consequent on Commercial Extension," was read.

Mr. Charles King offered the following resolution, prefaced by some complimentary remarks:—

Resolved, That the thanks of the Society be presented to Commodore Perry for his paper upon "Geographical Science consequent on Commercial Extension;" and that a copy of it be requested for the archives of the Society.

The President stated that the Society would be favored next Thursday evening, with a paper from the Chaplain of the late Japan Expedition, the Rev. Mr. Jones, on the Zodiacal Light. Adjourned.

Meeting, March 13th, 1856; Alex. W. Bradford, Esq., Vice-President, in the chair.

Mr. Russell, from Council, reported the names of the following gentlemen as members: R. B. Minturn, Robert G. Rankin, Joseph C. Delano, Esqs., who were thereupon duly elected.

Rev. Mr. Jones read a paper on the "Zodiacal Light," whereupon it was

Resolved, That the thanks of the Society be presented to Rev. Mr. Jones for his interesting paper upon the Zodiacal Light, and for his ingenious and scientific explanation of his theory relating thereto.

Adjourned.

Meeting, March 20th, 1856; H. E. Pierrepont, Esq., in the chair.

Mr. Disturnell moved the following resolutions, to wit:

Resolved, That the American Geographical and Statistical Society hold a meeting in the month of August, 1856, either in or out of the city of New York, as the Council of the Society may direct.

Resolved, That an invitation to visit the rooms of the Society be extended to the members of the "American Association for the advancement of Science in the United States" and their guests, including all distinguished individuals taking an interest in Geographical and Statistical Science.

Which resolutions were, on motion of Mr. Russell, referred to Council.

Mr. S. DeWitt Bloodgood read a paper on "Meteorology," whereupon it was—

Resolved, That the thanks of the Society be presented to Mr. Bloodgood for his paper, and that a copy be requested for its archives.

Adjourned.

Meeting, March 27th, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

Hon. James C. Cooley, having been recommended by Council, was elected a member of the Society; Mr. Augustus Peterman, of Berlin, Prussia, was proposed as a corresponding member, by Mr. Redfield; Mr. Disturnell proposed as corresponding members of the Society the following gentlemen: Col. J. J. Abert, of Washington, D. C.; Peter Force, Esq., of Washington, D. C.; Hon. John P. Kennedy, of Baltimore; John W. Alexander, of Baltimore; Henry D. Gilpin, of Philadelphia. On motion, their names were severally referred to Council.

Rev. Joseph P. Thompson, D. D., read a paper upon "The Three Routes to India;" whereupon it was—

Resolved, That the thanks of the Society be tendered to the Rev. Joseph P. Thompson for his paper, and that a copy be requested for the archives of the Society.

Adjourned.

Meeting, April 3d, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

Mr. Russell read a communication from the Rabbi M. J.

Raphall, stating that he would read before the Society his paper on Syria, during the early part of May; also, a letter from Dr. Kane, to the effect that he desired to meet the Society, and present a statement of his views in reference to Sir John Franklin and his party.

Mr. Disturnell presented to the Society a copy of the Report of the R. R. Commissioners of the State.

Mr. Disturnell offered the following resolution, to wit:—

Resolved, That a Committee of the Society be appointed to examine and revise the By-Laws, so that they may not conflict with the Charter of the Society or the Revised Statutes of the State; also to prepare for publication a faithful and full statement touching the origin of the Society; which shall comprise a full statement of the objects and organization of the American Geographical and Statistical Society, with a copy of its Charter, By-Laws, &c.

After debate, Mr. Watts moved the following resolution, which was adopted:—

Resolved, That Mr. Disturnell's resolution be referred to the Standing Committee on Printing, and that they report to Council.

Lieut. Viele read a paper on the "Topographical Survey of New Jersey;" whereupon it was—

Resolved, That the thanks of the Society be tendered to Lieut. Viele, for his paper, and that a copy of the same be requested for the archives of the Society.

Adjourned.

Meeting, April 10th, 1856; F. A. Conkling, Esq., in the chair.

The Secretary of Council submitted from Council the names of the following gentlemen as having been approved in Council and recommended to the Society for election, viz.: Pelatiah Perit, Charles Lamson, Stewart Brown, Dudley Field, Lewis Curtis, Sam'l S. Mitchell, Alexander Duncan, Theodore Stout, David Dudley Field, Ramsay Crooks, Jr., W. A. Booth, John Crerar, George F. Odell, David Wetmore, Charles H. Marshall, Wm. S. Howland, Jas. M. Brown, Wm. H. Russell,

Theo. Sedgwick, Wm. K. Strong, Wm. Butler Duncan, Caleb Barstow, Edmund Coffin, O. D. F. Grant, Warren Delano, Wm. E. Dodge, jun., and P. N. Spofford, Esqs., as ordinary members; and the following named gentlemen as corresponding members, to wit: Col. J. J. Abert, of Washington, D. C.; Aug. Peterman, Berlin, Prussia; Peter Force, of Washington, D. C.; Hon. John P. Kennedy, of Baltimore; John W. Alexander, of Baltimore; Henry D. Gilpin, of Philadelphia, Esqs.; who were duly elected members of the Society as aforesaid.

The following amendments to the By-Laws of the Society were then submitted by Mr. Poor, and laid over under the rules until a subsequent meeting of the Society, to wit:—

Add to Art. 3 of the By-Laws the words: "Any member before the payment of his initiation fee may become a life member upon the payment of the sum of fifty dollars, which shall be deemed to be inclusive of initiation fee, and all future annual dues; and any member subsequent to the payment of his initiation fee may become a life member upon the payment of the sum of fifty dollars, which shall be in lieu of all subsequent annual dues."

Mr. Waddell read a paper upon the advantages which would result from a judicious improvement of the "Lake Champlain and Hudson River Valley," whereupon it was—

Resolved, That the thanks of the Society be tendered to Mr. Waddell for his paper, and that a copy of the same be requested for the archives of the Society.

On motion of Mr. Watts, it was then unanimously—

Resolved, That a Committee of three be appointed by the chair to draw up and present to the legislature of the State of New York a memorial, in favor of a Ship Canal from Lake Champlain to the Hudson River, corresponding with the views expressed by Mr. Waddell in his paper read this evening.

Whereupon the chair appointed Messrs. Waddell, Watts, and Harrison, such Committee. Adjourned.

Meeting, April 17th, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

Mr. Russell, from the Committee on Printing, reported that the Committee were actively engaged in preparing a

Bulletin for issue by the Society; and submitted for the consideration of the Society, a list of papers which the committee proposed to publish in the Bulletin.

Mr. Wm. C. Redfield presented to the Society two pamphlets, setting forth the earliest attempts at railroads in this country; and also, on the subject of a Great Railroad Route from the Atlantic to the Mississippi Valley.

Adjourned.

Meeting, April 24th, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

The names of the following gentlemen having been approved by Council, were submitted for election, viz.:

Willard Felt, A. E. Bassett, Wm. N. Felt, J. H. Gourlie, Dr. Elbert H. Champlin, Epes W. Sargent, George T. Cobb who were thereupon severally elected members of the Society.

Marshall Lefferts, Esq., read a paper upon "The Electric Telegraph," whereupon it was—

Resolved, That the thanks of the Society be tendered to Mr. Lefferts for his paper, and that a copy be requested for the archives of the Society.

Adjourned.

Meeting, May 1st, 1856; Henry Grinnell, Vice-President, in the chair.

Mr. Russell stated that he was requested by the Foreign Corresponding Secretary, to report, that the Austrian government, through their Minister at Washington, the Chevalier Hulseman, had acknowledged the volumes presented in the name of the Society, and had, in compliance with the request of this body for interchange of documents, placed for the disposal of this Society at Vienna, eight volumes of statistical publications, and eighteen numbers of a periodical relating to the same; whereupon it was unanimously—

Resolved, That the thanks of the Society be returned to His Excellency the Austrian Minister at Washington, for the obliging interest he has taken in communicating to his government the wishes of this body,

and that His Excellency be respectfully requested to communicate to his government the thanks of this Society for its prompt accordance with their request and mutual interchange of Geographical and Statistical Documents, with a view to the advancement of Commerce and of Science; and the readiness of the Society at all times to lend their cheerful assistance to the Imperial Government of Austria whenever it may be desired in procuring Statistical information, in regard to the Commerce and Institutions of America.

Which resolution was unanimously adopted.

The Committee on Topics and Proceedings reported, that with this evening they closed their programme of the reading of papers before the Society for the season.

The Committee on Printing reported that the pamphlet containing the By-Laws, &c., was now in proof, and they submitted it in that form for the approbation of the Society; whereupon, on motion of Mr. Lefferts, it was—

Resolved, That copies of the pamphlet in proof be presented to the several members of Council, and that Council take action thereon at its next meeting on Thursday next.

A paper was read on the "Syrian Desert," by the Rev. Dr. Raphall.

Upon its conclusion the Rev. John Ford, of New Jersey, asked whether a supply of water for railroad purposes could be obtained in that region, which elicited some remarks from Dr. Champlin; upon the conclusion of which, on motion of Mr. Lefferts, it was—

Resolved, That the thanks of the Society be tendered to Dr. Raphall for his paper, and that a copy be requested for the archives of the Society.

Adjourned.

Meeting, May 8th, 1856; Hiram Barney, Esq., in the chair.

Mr. Russell read a letter, received by the Foreign Corresponding Secretary from the British Minister, relating to a Decimal Currency, and containing a list of queries; which matter was, thereupon, referred to the Committee upon that subject.

Mr. Russell offered the following resolution, which was adopted, to wit:—

Resolved, That a Committee of three be appointed to confer with the Rev. Dr. Raphall, and obtain his co-operation on the suggestions contained in the valuable paper read before the last public meeting of the Society.

The Chair thereupon appointed as such committee, Dr. Champlin, Henry E. Pierrepont and Archibald Russell, Esqs.

Mr. Lefferts moved the following resolution, to wit:—

Resolved, That the Committee on Topics and Proceedings be, and they are hereby, requested to secure, during the summer recess, the names of such persons as will read papers before the Society during the next season, and report the same at the first meeting of the Council in September.

Which resolution was adopted.

Mr. Poor asked the directions of the Society relative to the maps accompanying Mr. Hewitt's pamphlet.

Whereupon it was moved by Mr. Lefferts, that the whole subject be referred to the Committee on Printing, with power.

Adjourned.

Meeting, May 15th, 1856; Archibald Russell, Esq., was called to the chair.

Council reported the following names of new members as having been approved in Council, whereupon they were severally elected, viz.: Effingham H. Nichols, Luther Bradish, R. H. Timpson, William H. Appleton, Charles Kneeland, William E. Curtis, Henry A. Coit, T. J. Crowen, Jacob H. Leroy, Oakley Beach, Samuel J. Beebee, R. K. Haight, P. H. Vandervoort, Henry Meyer, Edward L. Beadle, Hiram Ketchum, jun., R. S. Kissam, M. D., Charles L. Tiffany, Henry R. Treadwell, Henry Ball, Ebenezer Monroe, William Black, Ernst Fiedler, J. Howard, jun., Henry G. Dunnel, M. D., J. W. Richards, M. D., A. Wellman Morse, John H. Riker, John L. Mason, Henry A. Robbins, B. F. Joslin, M. D., Thomas House Taylor, D. D., Alonzo A. Alvord, R. C. Root, J. Anthony, jun., John H. White, Francis B. Young, William Remsen, P. M. Suydam, Edwin D. Morgan, Edward Bayard,

M. D., David M. Reese, M. D., B. Fordyce Barker, M. D., J. Beakley, M. D., Gorham D. Abbott, Randolph W. Townsend, C. F. Lindsley, and Sidney A. Schieffelin, Esqs.

Dr. Champlin, on behalf of the committee appointed upon the subject of Dr. Raphall's paper, reported progress, and remarked that the committee would probably be ready to report upon the next Thursday evening. The committee had had an interview with the Ottoman consul on the subject. He then read a copy of a memorial to Congress, which had been prepared by Dr. Raphall, to be signed by officers of the Society.

Mr. Pierrepont (by reason of urgent private engagements) asked to be excused from acting as a member of the committee last referred to.

Mr. Pierrepont was excused, and Messrs. Poor and Thompson were added to the committee, making a committee of four upon that subject.

Mr. David E. Wheeler read a paper on the "Harbor of New York City," whereupon it was—

Resolved, That the thanks of the Society be, and the same are hereby, tendered to David E. Wheeler, Esq., for his paper on the New York Harbor; and that a copy be requested for the archives of the Society.

Adjourned.

Meeting, May 22d, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

Council reported for election the names of Mr. Caleb O. Halstead and Mr. James K. Ford; whereupon they were duly elected.

Mr. Barney then offered the following resolution, to wit:

Resolved, That the committee on Syrian Exploration have power to memorialize Congress on that subject;

Which was thereupon adopted.

Mr. Jay, on behalf of the Committee on Foreign Correspondence and Exchange, submitted the following report:—

REPORT

OF THE

Committee on Foreign Correspondence and Exchange.*

This Committee, in pursuance of the duties devolved upon them by the Society, "to institute, so far as might be practicable, a system of correspondence and exchange with foreign governments and foreign scientific societies," having learned from foreign ministers resident in Washington, that their governments were unaccustomed to recognize any private institution or society, unless commended to their favorable consideration by its own government, solicited the kind assistance of the Hon. Horatio Seymour, then governor of the State of New York, in invoking the aid and sanction of the Federal government.

Gov. Seymour, who was already familiar with the character and proceedings of the Society, readily acceded to the request of the Committee, and addressed the President of the United States in their behalf, stating their wish to approach the

* This committee was originally known as the Consular Committee, and as such secured the co-operation of the foreign consuls resident in the city of New York, in behalf of the Society, as evidenced in part by the document signed by the consuls, already included in the Bulletin (see page 3). Subsequently the scope of the committee's duties was enlarged, and their title changed, on the 22d February, 1855, to that of "The Committee on Foreign Correspondence and Exchange;" and the correspondence on their behalf has of late been conducted in the name of the Foreign Corresponding Secretary; Mr. John Jay, the chairman of the committee, having been elected to that office.

governments of Europe through the ministers resident at Washington, and expressing the hope that whatever assistance could be properly rendered by the Federal government, whether at home or abroad, in furtherance of the object of the institution, might be freely given.*

Gov. Seymour at the same time advised the President that "a practical and important part of their plan embraces the furnishing of their library with the latest geographical and statistical information, whether in the form of books, documents, maps, charts, or surveys, published by all foreign governments throughout the world, for the use of our merchants, shippers, and underwriters; that the foreign consuls accredited to New York, who are *ex officio* members of the Society, had cordially proffered their aid; and that, knowing the regard of the administration for the prosperity of commerce and the advancement of science, he felt the less hesitation in addressing the President in behalf of this institution, in the success of which the State, and especially the city of New York, were so deeply interested."

To this letter a reply was made by Mr. Marcy, Secretary of State, expressing the readiness of the Federal government to further the objects of the Society; and, at their own request, the Committee were furnished by the Department with letters of introduction to the foreign ministers resident at Washington, to our own ministers resident in foreign countries, and to our principal consuls throughout the world. The note to the foreign ministers closed with assuring them "that the President warmly appreciated the objects contemplated by the American Geographical and Statistical Society, and that whatever assistance can be properly extended by this department, either at home or abroad, in furtherance of those objects, will be at all times freely given."†

* Appendix A. For correspondence with the Chilian government, see appendix D.

† Appendix A.

With this note of introduction, and an appended autograph copy of Gov. Seymour's letter to the President, the Committee addressed themselves to the foreign ministers at Washington.*

In their letter, the committee stated that, under the sanction thus given to the institution by the Federal and State governments, as one of great and national importance, they begged leave to submit to the favorable consideration of their respective governments the request of the Society, for copies of such official documents and geographical and marine charts, issued under the auspices of the government, as are likely to be useful in conveying to the mercantile and scientific community, who will frequent their library, the latest and most accurate information in regard to the topography and statistics generally of the country, as well those relating to education and literature, public charities, prisons, municipal bureaus, sanitary regulations, and the like, as those belonging to the subjects of agriculture, mining, manufactures, commerce, railways, telegraphs, and other public improvements.

The Committee added, that the Society would at all times be ready, to the extent of their ability, to reciprocate so great a favor, by supplying to such governments, or to any scientific association they might name, similar information; and at the same time asked their acceptance of a series of volumes and documents, with which the Committee had been supplied for the purpose by the State and city governments, and the managers of public institutions.

They included the Colonial History of the State of New York, now in course of publication, and to be completed in 9 or 10 volumes imperial quarto; and various reports of the city and the State in reference to foreign emigration, the Alms House, the city finances, education, prisons, railroads, canals, &c.

The delivery of the boxes containing these documents was kindly undertaken by the Smithsonian Institute, who have

† Appendix B.

also obligingly offered to deliver packages for the Society, free of expense, in the different capitals of Europe.

The ministers thus addressed were those of France, Austria, Russia, Prussia, Holland, England, Belgium, Spain, Portugal, Sardinia, Turkey, and Chili,—all resident at Washington.

A letter,* accompanied by the Transactions of the Society, and other documents, was at the same time addressed to more than thirty learned societies, carefully selected from among those with whom the Smithsonian Institute are in correspondence, proposing a correspondence and interchange of transactions.

The societies are as follows:—

1. The Royal Swedish Academy of Science at Stockholm.
2. The Royal Norwegian University of Christiania.
3. The Royal Danish Society of Sciences at Copenhagen.
4. The Imperial Academy of Sciences at St. Petersburg.
5. Botanical Society of Netherlands at Leyden.
6. The Geographical Society at Berlin.
7. Senckenberg Society of Natural History at Frankfort-on-the-Maine.
8. Royal Society of Sciences at Gottingen.
9. The Commercial Library at Hamburg.
10. The Royal Bavarian Academy of Sciences at Munich.
11. The Royal Bohemian Society of Sciences at Prague.
12. The Imperial Academy of Sciences at Vienna.
13. The Society of Swiss Antiquities at Basle.
14. The Society of Swiss Antiquities at Zurich.
15. The Royal Academy of Science and Fine Arts at Brussels.
16. The National Society of Agriculture, Natural History, and Useful Arts, at Lyons.
17. The Institute of France at Paris.
18. The French Society of Universal Statistics at Paris.
19. The Society of Sciences, Agriculture, and Arts, of the Lower Rhine, at Strasbourg.

* Appendix C.

20. The Academy of Science, Letters, and Fine Arts, at Genoa.

21. The Practical Academy of Science and Belles Lettres at Naples.

22. The Astronomical Observatory of the Roman College at Rome.

23. The Royal Society at Edinburgh.

24. The Board of Admiralty at London.

25. The Royal Geographical Society of London.

26. The Royal Society of London.

27. The Statistical Society of London.

28. The Geographical Society of Bombay.

29. The Asiatic Society of China at Hong Kong.

30. The Royal Society of Van Dieman's Land at Hobartstown.

31. The Society Auxiliary to National Industry at Rio Janeiro.

32. The Society for the Advancement of Practical Economy at Havana.

33. The Mexican Society of Geography and Statistics at Mexico.

The responses of the foreign governments, as will be seen on reference to the correspondence, a part of which is appended to this report, have generally expressed their cordial assent to the system of exchange proposed by the Committee.

His Excellency Señor Antonio Varas, Secretary of State to the Government of Chili, in writing to Mr. Causten, the Consul-General, in acknowledgment of the works sent by the Society, remarks, "that my Government has beheld with interest the purposes of that institution, and is, on its part, disposed to furnish to the Society the data and official publications which it desires to obtain in regard to Chili, and that from time to time it will go on to make the respective remittances in proportion as they are published."*

* Appendix D.

The British minister, Mr. Crampton, in a second note, after acknowledging the letter of the Committee, inclosed a copy of a dispatch from the earl of Clarendon,* dated July 5; in which his Lordship requests Mr. Crampton to state to the Society that he has had great pleasure in meeting their wishes, and that he had received a communication from Sir Roderick Murchison, of the Museum of Practical Geology, to whom he had communicated their letter, stating that he had great satisfaction in procuring, for transmission to the American Geographical and Statistical Society, certain publications, which he would forward to New York by an early opportunity. Lord Clarendon's letter concludes with the remark: "I have to add, that it appears to me very desirable that some arrangement should be made for a regular exchange of papers of the nature in question."

A delay occurred in the transmission of some of the packages from Washington, which may have postponed the responsive action of the governments to which they were addressed.

The several governments have already acceded to the request of the Society, and transmitted valuable official and other documents of the character requested.

The government of Great Britain, through John F. Crampton, Esq., late minister at Washington, has presented a valuable series, embracing 22 volumes of reports of the British Association for the Advancement of Science, Memoirs of the Geological Society of Great Britain, and of the Museum of Geology, and the Records of the School of Mines and of Science applied to the Arts.

The Republic of Chili, through her Consul-general, John F. Causten, Esq., very promptly and cordially responded to the application, and expressed its readiness to continue the exchange with regularity.

The Sardinian government,† through the Chargé d'Affaires

* Appendix E. † Appendix F.

ad Interim, immediately expressed the conviction, that has since been fully verified, that "His Majesty's government would readily assent to the proposition, as it has ever been eager to promote the spreading of the knowledge of foreign countries, in view of the mutual benefit resulting from such knowledge."

The Austrian government, through its minister, the Chevalier Hülsemann, have responded to the request of the Society,* and transmitted a package of statistical publications, which have been safely received from Mr. Flügel, at Leipsic.

The government of the Netherlands,† in acknowledging the works sent by the Society, intimates that the Department for Interior Affairs has taken due notice of their request, "which has given great satisfaction, the Department being much inclined to such an exchange;" and requests the committee to address M. Vattemare, at Paris, agent for the Netherlands for the national exchange of objects of science and arts.

The government of Prussia‡ has also promised to give authority to M. Vattemare for the same purpose; and the government of Spain has thus far only acknowledged the receipt of the works presented by the Society.§

It may be that the skillful efforts already made by M. Vattemare in the cause of international exchange, have to some extent monopolized the ground which this Society proposed to occupy.

The results, however, already accomplished, amply justify the wisdom of the step taken in this behalf; and with the systematic arrangements now made for the transmission of documents, through the obliging courtesy of the Smithsonian Institute,‖—to whose accomplished secretary, Prof. Joseph Henry, the Committee beg to express their sincere acknowledgments,—it will be easy to present, every year or two, to

* Appendix G. † Appendix H.
‡ Appendix I. § Appendix J. ‖ Appendix K.

each of the foreign governments who have acceded to our views, not simply the Bulletin of the Society, but a box of valuable documents emanating from this city, State, and nation, and bearing upon subjects of practical interest to other nations; thereby securing, in return, a similar consignment of works and documents bearing upon geography and statistics, and adding immensely to the reliable sources of information now open to American writers upon these topics.

An accurate list of the works already received will be found in the report of the Librarian, as well as a mention of the bulletins, or other official papers, thus far received from the foreign societies with which the Committee opened a correspondence. All which is respectfully submitted.

JOHN JAY,
ARCHIBALD RUSSELL,
R. A. WITTHAUS,
Committee on Foreign Correspondence and Exchange.

APPENDIX

TO REPORT OF THE

Committee of Foreign Correspondence and Exchange.

A.

CORRESPONDENCE WITH THE AMERICAN GOVERNMENT.

Letter from Governor Seymour, of New York, to the President of the United States.

STATE OF NEW YORK, EXECUTIVE DEPARTMENT,
ALBANY, May 12, 1854.

TO THE PRESIDENT OF THE UNITED STATES:

SIR,—Learning that the Trustees of the American Geographical and Statistical Society are about to ask your Excellency's approval of an application they propose making to the governments of Europe through their Ministers resident at Washington, I venture to express the hope that whatever assistance can be properly rendered by the Federal government, whether at home or abroad, in furtherance of the objects of the institution, will be freely given.

The Society has been organized some two years; and during that brief period, under the able management of Mr. Bancroft, Dr. Hawks, and other well-known gentlemen, it has vindicated its claim to public confidence; and the legislature of this State, whose session has just closed, exhibited its sense of the value of the course proposed by it, as well to commerce as to science, by granting to the Society a special charter. A practical and important part of their plan embraces the furnishing of their library with the latest geographical and statistical information,—whether in the form of books, documents, maps, charts, or surveys, published by all foreign governments throughout the world,—for the use of our merchants, shippers, and underwriters.

The foreign consuls accredited to New York, who are *ex-officio* members of the Society, have cordially proffered their active aid; and I believe that the foreign ministers who have been consulted, think the request for official documents will be cheerfully responded to by their respective governments.

Well knowing the constant regard of the Administration for the prosperity of commerce and the advance of science, I feel the less hes-

itation in addressing your Excellency in behalf of this institution, in the success of which the State and especially the city of New York are so deeply interested.

I have the honor to be

Very truly yours, &c.,

HORATIO SEYMOUR,

Governor of New York.

To the Secretary of State.

ROOMS OF THE GEOGRAPHICAL AND STATISTICAL SOCIETY,
NEW YORK, Jan., 1855.

TO THE HON. WM. L. MARCY, SECRETARY OF STATE:

SIR,—On the 12th May, 1854, his Excellency Governor Seymour, of New York, addressed to the President a letter in behalf of the American Geographical and Statistical Society, a copy of which for more convenient reference, is hereto appended.

On the 29th May, in acknowledging the letter of the Governor, you remarked,—

"In reply, I am directed to acquaint your Excellency that the President duly appreciates the objects contemplated by the institution, and that if letters of introduction to the diplomatic representatives of foreign governments in this country, and to the diplomatic and consular representatives of the United States abroad, will be of any service to the Trustees of the Society referred to, such letters will most cheerfully be accorded to them."

The offer thus promptly and cordially made by your Department, and which Gov. Seymour has communicated to the Society, the Trustees warmly appreciate and gratefully accept.

It will open to them facilities for the prosecution of their labors in remote parts, which might otherwise have long remained closed; and I am instructed to express to you, and through your Department to the President, our sincere acknowledgments.

The Society have delayed to ask for the letters so kindly tendered until they were prepared to accompany their application to foreign governments with the offer of some official documents of the like character as those they intended to solicit, in addition to their own published Transactions.

A recent grant to them for this purpose by the State of New York now enables them to proceed as they intended.

They will accordingly be glad to receive from the Department, at as early a day as may be convenient, letters of introduction to the diplomatic representatives of foreign governments in this country, and to

the diplomatic and consular representatives of the United States, abroad, recommending to them Messrs. John Jay, Archibald Russell, and R. A. Witthaus, the Committee of the American Geographical and Statistical Society charged with the duty of corresponding with foreign parts for the procurance of geographical and statistical information.

Two of the Trustees, Hiram Barney, Esq., and Marshall Lefferts, Esq., will be the bearers of this letter to the Department, and will take charge of its reply.

If there are any recent governmental documents bearing upon American Geography and Statistics, such as the census returns, or the late Compendium of the Census, the Expedition to the Salt Lake, Lieut. Herndon's Expedition, or the last volume of the Patent Office Reports, which could be granted to our Society without inconvenience, for the purpose of foreign literary exchange, it might greatly assist their efforts in the procurance of statistical documents and charts from abroad, and at the same time give a valuable circulation in the most appropriate quarter, to documents that exhibit the extent, the enterprise, and the resources of this country.

The Society will therefore be still more indebted to your Department, if it can, without departing from any rule, assist Mr. Barney and Mr. Lefferts to procure copies of such documents.

I have the honor to be, &c.,

JOHN JAY,
Foreign Corresponding Secretary.

Circular Letter from the State Department at Washington to American Ministers and Consuls in Foreign Countries.

DEPARTMENT OF STATE, WASHINGTON, 1855.

SIR :—

The American Geographical and Statistical Society of the State of New York, is desirous of any assistance which you can conveniently give towards forwarding the useful purposes for which it was established. It has appointed Messrs. JOHN JAY, ARCHIBALD RUSSELL, and R. A. WITTHAUS, highly respectable gentlemen of that State, to hold intercourse and correspondence with the diplomatic agents of the United States abroad upon the business of the Society. I accordingly commend those gentlemen to your kind regards,

And am, very respectfully,
Your obedient servant,
(Signed) WM. L. MARCY.

Circular Note from the Department of State, recommending the Society to the Foreign Ministers resident at Washington.

DEPARTMENT OF STATE, WASHINGTON,
February, 1855.

SIR:—

The special attention of the President has recently been drawn by his Excellency the Governor of New York, to "The American Geographical and Statistical Society," as one in which both the city and the State of New York take a deep interest, from the valuable results which it aims to secure for commerce and for science.

An important part of its plan, and one which I understand has received the approval of the foreign consuls resident in New York, who are *ex-officio* members of the Society, consists in furnishing to their library the latest geographical and statistical information, from all parts of the world, for the use of merchants, shippers, and underwriters.

With this view the Society propose to address themselves to foreign governments through their ministers resident at Washington.

To enable them the more readily to accomplish this result, I am requested by the President to recommend to your Excellency Messrs. JOHN JAY, ARCHIBALD RUSSELL, and R. A. WITTHAUS, of New York, the Committee charged with that duty, and at the same time to assure you that the President warmly appreciates the objects contemplated by the American Geographical and Statistical Society, and that whatever assistance can be properly extended by this Department, either at home or abroad, in furtherance of those objects, will be at all times freely given.

I have the honor to be
Very respectfully yours,
(Signed) WM. L. MARCY.

B.

Circular Letter addressed to the Foreign Ministers resident at Washington.

AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY,
NEW YORK, May, 1855.

To ———— &c., &c., &c., WASHINGTON:

SIR,—On behalf of the American Geographical and Statistical Society, we have the honor to present to your Excellency the following note of introduction from Mr. Marcy, Secretary of State, and a copy of the official letter referred to by Mr. Marcy, addressed by the Governor of the State of New York to the President of the United States.

Under the express sanction thus given to this institution by the Federal and State Governments, as one of great and national importance, we beg leave through you to submit to the favorable consideration of your government our respectful request for copies of such official documents and geographical and marine charts issued under the auspices of the Government, as are likely to be useful in conveying to the mercantile and scientific community who will frequent our library the latest and most accurate information in regard to the topography and statistics generally of the , as well those relating to education and literature, public charities, prisons, municipal bureaus, sanitary regulations, and the like, as those belonging to the subjects of agriculture, mining, manufacture, commerce, railways, telegraphs, and other public improvements.

While we base this application to your government upon the objects and position of our Society, as sanctioned by the President of the United States, you will, perhaps, permit us to add, that we shall at all times be ready, to the extent of our ability, to reciprocate so great a favor, by supplying to your government, or to any scientific association you may name to us, similar information.

An act of Congress has been recently passed, making an appropriation of Federal documents for foreign exchange, by which the Census of the United States, the Reports of its Patent Office, Official Reconnaisances, and other documents which may be of interest in Europe, can be furnished as you may desire.

In addition to these, we can supply the public documents of the State and city of New York, which may sometimes prove interesting and useful; and at all times we will be ready to procure for you documents in regard to any of our institutions upon which your Government may desire information.

We now have the honor of addressing to your Excellency, in the hope that they may be accepted by your , some State documents:

1. Documents relating to the Colonial History of the State of New York, vols. i., ii., iii., and iv., imperial quarto, of about 1000 pages. This work is compiled in part from the researches of the Historical agent of the State of New York, by permission of the respective governments, in the archives of England, France, and Holland, and is to be completed in 8 or 10 volumes.
2. Report of the New York State Normal School.
3. Report of the Superintendent of Public Instruction, 1854.
4. Report of Railroad Companies in New York, 1855.
5. Report of the State Engineer and Surveyor, 1854.
6. Report of the several Insurance Companies, 1855.
7. Report on Railroad Accidents, 1853.
8. Report of the Canal Commissioners, 1855.

9. Report of the State Engineer and Surveyor, 1855.
10. Report of Railroad Companies, 1853.
11. Report of Railroad Companies, 1854.
12. Report of Commissioners of Emigration, 1854.
13. Report of Commissioners of Alms-Houses.

We pray your Excellency, of whose approval of the general features of our institution we shall be glad to be assured, to communicate our request, with the accompanying letters and documents, to your government.

We have the honor to be,
With sentiments of great respect,
Your Excellency's most ob't serv'ts.

JOHN JAY,
ARCHIBALD RUSSELL,
R. A. WITTHAUS,
Committee on Foreign Correspondence and Exchange.

C.

Circular Letter to the Foreign Scientific Societies mentioned in the Report.

AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY,
NEW YORK, May 22, 1855.

SIR :—

In behalf of the American Geographical and Statistical Society, we have the honor to transmit to four volumes of the Colonial History of New York, imperial quarto, and will forward the remaining volumes as published, together with some statistical documents, a list of which is inclosed.

In opening a correspondence with your Society, the American Geographical and Statistical Society is desirous of promoting an exchange of documents and communications, which we trust will be mutually beneficial.

Incorporated by a special charter from the State of New York, the accompanying letter from Governor Seymour to the President of the United States, and the reply to it through the Secretary of State, the Honorable William L. Marcy, will show to your Society the position which the American Geographical and Statistical Society occupies in reference to our Federal and State governments. Situated in the commercial metropolis of the United States, and sustained by the co-operation of the whole foreign consular body here resident, we are desi-

rous of forming intimate relations with similar institutions in other countries, which may enable us to procure for this community a full collection of recent documents in relation either to geography or statistics; while on our part, we would offer to obtain for you any reports published either by the General or State Governments, or by literary and scientific societies, on the exploration, meteorology, geology, education, crime, emigration, sanitary or religious and social reform. We respectfully invite your Society to procure and transmit to New York the transactions published by them (the earlier numbers when convenient), and reports on the various topics which are naturally of so much interest in a country where every thing is nascent in its character, and may be molded or modified to avoid the evils or attain the benefits which may attach to similar movements abroad.

All reports, therefore, relating to religion, morals, science, or art, as well as those relating to trade, mining, insurance, railroads, or other physical development, we most respectfully and urgently invite you to forward to us.

All documents intended for our Society, should be labeled with our name, and sent *to the care of the Smithsonian Institution*, which has an agency established for the transmission of documents, of which we avail ourselves in sending this package to your Society.

Hoping that this attempt on the part of the American Geographical and Statistical Society may call forth on the part of the

a corresponding desire to promote the same object,

We have the honor to be

Yours, very respectfully,

(Signed) JOHN JAY,

" ARCHIBALD RUSSELL,

" R. A. WITTHAUS,

Foreign Corresponding Committee.

D.

CORRESPONDENCE WITH THE GOVERNMENT OF CHILI.

CONSULATE OF CHILI, WASHINGTON
October 15, 1855.

GENTLEMEN:—

I had the honor on the 20th of June last, to acknowledge the receipt of your communication addressed to the Chilean Government, accompanied by a package of books; and since then I have also received a supplementary package containing,—

One copy of the Annual Report of the Trustees of your State Library, of 1855.

One copy of the Eighth Annual Report of the Regents of your University, on the condition of the State Cabinet of Natural History, and the Historical and Antiquarian Collection annexed, 1855.

One copy of the Annual Report of the Regents of the University of New York.

All the above for the government.

And one copy of the last-named for the Superintendent of Public Instruction, of Chili.

I promptly forwarded to the Secretary of State of Chili, your said communication, and at the same time informed him that the packages before mentioned were received by me.

They are still in my possession, waiting for a suitable opportunity to forward them with another collection of books now daily expected.

I have received from Chili an answer to my said letter; a translated extract therefrom, I have the pleasure to make on the next following page of this sheet.

The cordial acceptance by the Chilean government of your proposition to reciprocate exchanges, which I am instructed to convey to you, is a very agreeable duty; as will also be my rendering every facility in my power to both parties, in carrying into effect the laudable object referred to.

I have the honor to be,
With great respect,
Your obedient servant,
(Signed) JAMES H. CAUSTEN.

To JOHN JAY, ESQ.,
ARCH'D RUSSELL, ESQ.,
R. A. WITTHAUS, ESQ.,
Committee American Geographical and Statistical Society of New York.

Extract.

[Translation of an extract of an official letter from his Excellency Señor Don Antonio Varas, Secretary of State of Chili, addressed to James H. Causten, Chilean Consul at Washington, dated Santiago de Chili, August 27th, 1855.]

I have received your official letter of the 3d of July last, together with the communication addressed to you by the Geographical and Statistical Society of New York, and the copy of the reply which you made thereto; and with this notice I will state to you that my government has beheld with interest the purposes of that institution, and is, on its part, disposed to furnish to the Society the data and official publications which it desires to obtain in regard to Chili; and that from time to time it will go on to make the respective remittances in proportion as they are published. You will therefore

communicate to it in the name of my government, all that I have just stated, thanking it for the works and documents it has favored us with through you.

Translation.

[Memorandum of the documents transmitted to the Consul of Chili, in Washington, to be forwarded to the Geographical and Statistical Society of New York.]

Six Reports made to the Chilean Congress by the Departments of the Interior, Foreign Affairs, Justice, Treasury, War, and Navy, in the year 1855.
One copy of the Statement of General Expenses of the Nation in the year 1854.
One copy of the Commercial Statistics of the Republic, published from the year 1844 to the first six months of 1855, inclusive.
One copy of the two Reports published in regard to the titles of the Republic to the Straits of Magellan.
One copy Biographies of Celebrated Men of America.
One copy Custom House Regulations of Chili.
One copy Statistical and Geographical Notes concerning several Rivers of the south of Chili.

CONSULATE OF CHILI, WASHINGTON,
February 8, 1856.

GENTLEMEN:—

I have the honor to present herewith a translated copy of a dispatch from the Chilean government, with a list of certain documents intended for your Society; also a copy of my letter of this date to Theodore W. Riley, Esq., of New York, by which you will see the channel through which said documents will reach you; when they shall be received, be pleased to so advise me in order that I may so inform said government.

With a tender of my services at all times,
I remain, Gentlemen, with great respect,
Your obedient servant,
(Signed) JAMES H. CAUSTEN.

To Messrs. JOHN JAY,
ARCH. RUSSELL,
R. A. WITTHAUS,
Committee of the American Geographical and Statistical Society of New York.

Translation No. 18. [Copy.]

SANTIAGO, November 27, 1855.

SIR:—

In conformity with what I stated to you in my dispatch, No. 15, dated August 27th of the present year, I transmit to you for the "Geographical and Statistical Society of New York," the ministerial documents, statistical data, and other printed papers mentioned in the inclosed list. These you will present to the said Society, in the name of this government, expressing, at the same time, the government's desire to promote an exchange with it, of publications beneficial to the advancement and development of both countries.

God preserve you.

ANTONIO VARAS.

P. S. The above-mentioned publications being transmitted by a sailing vessel, you must not be surprised if they reach you a considerable time after the receipt of the present letter.

TO THE CONSUL OF THE REPUBLIC OF CHILI IN WASHINGTON.

E.

CORRESPONDENCE WITH THE GOVERNMENT OF GREAT BRITAIN.

WASHINGTON, August 3, 1855.

GENTLEMEN:—

With reference to our previous correspondence in relation to the mutual interchange of Official Marine Charts and Geographical and Statistical Papers, I have now the honor to inclose the copy of a dispatch which I have received from the earl of Clarendon, from which you will perceive his Lordship will have much pleasure in meeting the wishes of the American Statistical and Geographical Society, and that, accordingly, certain publications which have been procured from Sir N. Murchison, will be forwarded to the Society by the earliest opportunity.

I take this opportunity of acknowledging the receipt of the documents forwarded to me by the Society at the commencement of last month, and of stating that I have forwarded them to her Majesty's Principal Secretary of State for Foreign Affairs.

I have the honor to be, Gentlemen,
Your most obedient humble servant,
(Signed) JOHN F. CRAMPTON.

TO THE COMMITTEE OF THE AMERICAN STATISTICAL AND GEOGRAPHICAL SOCIETY.

FOREIGN OFFICE, July 5th, 1855.

SIR:—

I have to acquaint you that I have communicated to the Museum of Practical Geology, through Sir Roderick Murchison, the letter from the American Geographical and Statistical Society of N. York, inclosed in your dispatch, No. 115, of the 12th ultimo, proposing an interchange of documents on statistical and other subjects, and containing a list of papers which that Society are desirous of presenting to her Majesty's government. You will state to the Committee that in so doing, I have had great pleasure in meeting their wishes, and that I have received a communication from Sir R. Murchison, in reply, stating that he had great satisfaction in procuring for transmission to the American Geographical and Statistical Society certain publications, which will be forwarded to New York by an early opportunity.

I have to add, that it appears to me very desirable that some arrangement should be made for a regular exchange of papers of the nature in question.

I am, &c.,

(Signed) CLARENDON.

J. F. CRAMPTON, ESQ.
&c., &c., &c.

To the British Minister.

GEOGRAPHICAL AND STATISTICAL ROOMS,
NEW YORK, February 12th, 1856.

SIR:—

I have the honor to communicate the following resolution, unanimously adopted at a recent meeting of the American Geographical and Statistical Society, on hearing the letter of your Excellency inclosing an extract from a dispatch of Lord Clarendon, accompanied by the present of books and documents from the British government, the receipt of which has been previously acknowledged.

"*Resolved*, That the thanks of this Society are due to his Excellency, Mr. Crampton, the British Minister, for his very prompt and obliging attention to the request of the Society; and that Mr. Crampton be respectfully requested to convey to his government the sincere acknowledgments of this body, for the valuable series of volumes with which it has presented us."

I beg leave, Sir, at the same time, to repeat the assurance contained in the first letter of the Foreign Committee, that the Society will be happy at all times, not simply to continue a system of exchanges, in which for some time to come the weight of advantage might

be supposed to be largely on their side, but also to the extent of their ability to assist your Legation whenever you may desire it, in procuring Statistical or other information coming within the objects of our institution, from any part of the United States.

I beg leave, also, to inclose a card with the programme of the meetings of the Society until April next, and to express the hope that when you visit New York, the Society may have the pleasure of seeing you at their rooms, and expressing their thanks to you in person.

I have the honor to be
&c., &c., &c., &c.

JOHN JAY,
Foreign Corresponding Secretary.

His Excellency,
The British Minister.

F.

CORRESPONDENCE WITH THE SARDINIAN GOVERNMENT.

His Sardinian Majesty's Legation,
New York, June 23d, 1855.

Gentlemen :—

The letter which you have directed to this Legation, dated the 22d of May last, has only been received to day; and I hasten to inform you, that I shall by the next opportunity, transmit the said letter to his Majesty's government, as well as the documents which you propose to send to it, and which I feel assured will be most acceptable.

I beg in the mean time to express my conviction that his Majesty's government will readily assent to your proposition; as it has ever been eager to promote the spreading of the knowledge of foreign countries, in view of the mutual benefits resulting from such knowledge.

The documents mentioned in your letter have not reached this Legation; and I would request your kindness that they may be forwarded to his Majesty's Consulate in New York, 57 Pine Street, as I shall have, in a few days, a good opportunity to transmit them to the government.

I have the honor to be, Gentlemen,
Your most obedient servant,

JOSEPH VALERIO,
Chargé d'Affaires.

To the Foreign Corresponding Committee
of the Am. Geo. and Statis. Society,
New York.

CONSOLATO GENERALE DI SARDEGNA AGLI STATI UNITI.

NEW YORK, Aug. 16th, 1856.

SIR:—I duly received yours of the 16th January last. With the present, I have the honor to forward to you documents received at their Consulate General, from the government of his Sardinian Majesty, for the use of the American Geographical and Statistical Society.

I have the honor to be
Yours most respectfully.
For the Consul-General and
Le Chanceller,
S. DELORNE.

TO THE PRESIDENT OF THE AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY, N. Y.

G.

CORRESPONDENCE WITH THE AUSTRIAN GOVERNMENT.

From the Austrian Minister.

TO MESSRS. JOHN JAY, ARCH. RUSSELL AND R. A. WITTHAUS, *Foreign Corresponding Committee of the American Geographical and Statistical Society in New York City.*

NEW HAVEN, CONN., June 6, 1855.

GENTLEMEN:—

I have the honor to acknowledge the receipt of your letter, dated May 22d last, accompanied by one from the Hon. Wm. L. Marcy, U. S. Secretary of State, transmitting to me, for the purpose of its being presented to his Majesty the Emperor of Austria, two volumes of documents relating to the colonial history of New York, and expressing the wish to receive from the Imperial government such publications on historical and statistical subjects as may be thought useful and interesting for the literary Society whose organs you are.

I shall not fail to transmit your communication, as well as these books, to the Ministry of Foreign Affairs in Vienna, accompanying them with such observations as appear to me most proper to produce the result which you desire; and I shall have great pleasure in informing you in due time of the result.

Remaining, Gentlemen, very respectfully,
Your obt. Servt.
(Signed) HULSEMANN.

From the Austrian Minister.

AUSTRIAN LEGATION, WASHINGTON CITY, D. C.
March 22, 1855.

SIR :—

I beg leave to inform you that I have just received an answer to my dispatch of last June, by which I transmitted the two volumes of the Colonial History, which you were so good as to offer to the Imperial government, and for which I have been instructed to make the proper acknowledgment to the Amer. Geographical and Statistical Society.

I have been, at the same time, informed, that according to the wish expressed by you, eight volumes of a Statistical Publication, and eighteen numbers of periodical concerning the same, are now at your disposal in Vienna and I have to request, you will be so good as to inform me of the name or the person in Vienna to whom the same may be delivered.

Remaining, Sir, very respectfully,
Your obt. servt.
(Signed) HULSEMANN.

To JOHN JAY, ESQ.,
Foreign Corresponding Secretary of the Am. Geo. and Stat. Society, N. Y. City.

To the Austrian Minister.

ROOMS OF THE AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY,
NEW YORK, May 12, 1856.

SIR :—

I have the honor, herewith, to communicate to your Excellency, an authenticated copy of a resolution, passed by the American Geographical and Statistical Society on the 1st May, inst., returning their thanks to your Excellency, and through you to the Imperial government of Austria, for its prompt compliance with the request of the Society for an interchange of documents bearing upon Geography and Statistics.

In regard to that part of the Resolution which expresses the readiness of the Society, at all times, to lend their cheerful assistance to your government or your Legation, in procuring statistical information, touching the commerce and institutions of America, I may, perhaps, without impropriety remark, that the Society are now engaged, through a special committee, in preparing replies to certain queries, recently received by them from the British government, through its Minister at Washington, upon the subject of the decimal system in coins, weights,

and measures; and that on all kindred subjects I shall be most happy to procure for your Excellency, through the Society, any information you may at any time require.

I have the honor to be
&c., &c., &c.

(Signed) JOHN JAY,
Foreign Corresponding Secretary.

To his Excellency the
Chevalier Hulsemann, &c., &c.

H.

CORRESPONDENCE WITH THE GOVERNMENT OF THE NETHERLANDS.

From the Consul-General.

Consulate General of the Netherlands for the U. S.
New York, Nov. 28, 1856.

To the President of the American
Geographical and Statistical Society, New York.

Sir:—I am requested by H. E., the Minister for Foreign Affairs at the Hague, to communicate to the Society the receipt of the works forwarded by it through Mr. Du Bois to the Hague, and to present to it the sincere thanks for this present.

The Department for Interior Affairs has taken due notice of the desire of the Society to establish an exchange of Geographical, Statistical, and other works, which has given great satisfaction, the Department being likewise much inclined to such an exchange.

For such purpose the intermedium of Mr. Vattemare, at Paris, Agent for the Netherlands for the national exchange of objects of Science and Arts, might be made use of, the more readily so since that gentleman, if I am not mistaken, is acting in the same capacity for the U. S. He will be authorized by the Department at the Hague, to accede to such exchanges; and I would therefore request the Society to address Mr. Vattemare, or his agent in the U. S., for such a purpose, as well as for making known the objects which it might desire in exchange.

With this object, the works already presented have been added to the fund for international exchanges.

I have the honor to remain, Sir.
Your obt. servt.

(Signed) RUD. C. BURLAGE.

I.

CORRESPONDENCE WITH THE PRUSSIAN GOVERNMENT.

PRUSSIAN LEGATION, WASHINGTON,
July 9, 1855.

GENTLEMEN:—

I have the honor to acknowlege the receipt of your communication, addressed to this Legation on the 22d of May, 1855, by which you propose to the government of his Majesty the King of Prussia, a mutual exchange of such official documents, and geographical and marine charts, as are likely to be useful to the mercantile and scientific community.

I have submitted this request, of so great an importance, to my government, the thanks of which I beg you to receive for the interesting documents presented to the Prussian government, mentioned in your letter.

They will be forwarded at the earliest opportunity to Prussia.

I have the honor to remain, Gentlemen,
with great respect,
Your very obe't servant,

V. GRABOW,
Chargé d'Affaires.

To THE AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY AT NEW YORK.

PRUSSIAN LEGATION, WASHINGTON,
March 11, 1856.

SIR:—

I have been favored by your letter of the 27th February last, inclosing a Programme of the weekly meetings of the American Geographical and Statistical Society, and inviting me to assist at their meetings.

I beg to express my thanks for this kind invitation, of which I will avail myself with great pleasure when I come to New York.

The proposal of exchange from your Society, of official documents and charts published by the governments of the United States and Prussia, was duly submitted to my government last summer, when I visited Berlin; and the documents presented by the Committee of your

Society to this Legation were sent, and received by my government; but not having received an official answer on the subject, I am not enabled to communicate to the Society the resolution of my government in regard to the proposed exchange.

My private opinion is, that since the Smithsonian Institute has already established an exchange of public documents, and publications of private scientific societies, with most of the scientific institutes of Prussia, the whole matter has been left in the hands of the aforesaid Institute, and their agent in Germany, who is the United States Consul at Leipzig.

In regard to the documents presented by your Society above mentioned, I have no doubt that my government will send in return some of their official publications, with a thankful acknowledgment of those received by the Geographical Society.

I have the honor to be,
Sir, respectfully,
Your obdt. servant.
FR. V. GEROLT,

JOHN JAY, ESQ.,
Cor. Sec. of the American Geographical and Statistical Society, N. Y.

From the Consul-General of the Netherlands.

CONSULATE GENERAL OF THE NETHERLANDS FOR THE UNITED STATES,
NEW YORK, NOV. 28, 1856.

TO THE PRESIDENT OF THE AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY, N. Y.

SIR:—I am requested, by H. E. the Minister for the Foreign Affairs at the Hague, to communicate to the Society the receipt of the works forwarded by it through Mr. DuBois, to the Hague, and to present to it the sincere thanks for this present.

The Department for Interior Affairs, has taken due notice of the desire of the Society to establish an exchange of Geographical, Statistical, and other works, which has given great satisfaction, the Department being likewise much inclined to such an exchange.

For such purpose the intermedium of Mr. Vattemare at Paris, agent for the Netherlands, for the national exchanges of objects of Science and Arts, might be made use of, the more readily so since that gentleman, if I am not mistaken, is acting in the same capacity for the U. S. He will be authorized by the Department at the Hague, to accede to such exchanges, and I would therefore, request the Society to address Mr. Vattemare or his agent in the U. S., for such objects as it might be

willing to forward for such a purpose, as well as for making known the objects which it might desire in exchange.

With this object, the works already presented have been added to the fund for international exchanges.

I have the honor to remain, Sir,

Your obt. servant.

RUD. C. BURLAGE.

J.

CORRESPONDENCE WITH THE GOVERNMENT OF SPAIN.

LEGACIAN DE ESPAÑA EN WASHINGTON
WASHINGTON, Feb. 29, 1856.

SIR:—

I beg leave to acknowledge the receipt of your letter of the 27th inst., and of the programme of the weekly meetings of the Society you represent, which I should be most happy to attend, should I chance to visit New York.

The volumes and reports referred to in your last communication, and in that of the Foreign Corresponding Committee of the 22d May last, though with some delay, were duly received, and, I have the honor to announce to you, forwarded to their destination.

Praying you to thank the Society in my name for their kind politeness,

I have the honor to be
with great consideration,
Your most obt. servant,
(Signed) ALFONSO DE ESCALAUTE.

JOHN JAY, ESQ.,
Foreign Cor. Sec. of the American Geographical and Statistical Society, N. Y.

K.

FROM THE SECRETARY OF THE SMITHSONIAN INSTITUTE.

SMITHSONIAN INSTITUTION,
WASHINGTON, May 15, 1856.

DEAR SIR:—

In reply to your letter, I write to inform you, that the Institution will with much pleasure act in behalf of the Geographical and Statistical Society, as agent for the exchange of its publications, on the usual

conditions, as specified in the circular which has been forwarded to you.

It is not our custom to charge the expense of reception or transmission of parcels, except when they considerably increase the cost to the Institution. In any case the charge made, would be merely that proportionally applicable to the packages.

We have no depot in Vienna. Our agents are Dr. Felix Flugel, Leipsic; Henry Stephens, London; and Hector Bossange, Paris; to whom books may be sent for your Society. They are not authorized, however, to receive works purchased for American Institutions.

In all cases deliveries to our agents must be made free of expense.

Permit me to call your attention to the fact that a bill of $6 43, charged on the boxes sent to the Institution last June, and met by us, still remains unpaid by the Society. The charges had been paid part of the way, but not through to Washington. You will observe that our rules require free delivery in this city.

I am very respectfully,

Your obed't servant,

(Signed) JOSEPH HENRY.

Secretary.

JOHN JAY, ESQ., NEW YORK.

Meeting, October 2d, 1856; Henry Grinnell, Esq., Vice-President, in the chair.

Mr. Russell, from Council, reported to the Society the following names of gentlemen (as having received the approbation of Council) for election as ordinary members, viz.:—James W. Phillips, A. D. F. Randolph, James A. Edgar, E. Gibson, Jed. Fry, M. Knoedler, W. S. Lawrence, J. T. Hodge, H. B. Smith, J. T. Stratton, R. Ogden Doremus, Robt. Rait, Harvey Burdell, Albert Gilbert, Ezra Ludlow, E. R. Fairchild, D. D. T. Nestell, M. D., George G. Haydock, Augustin Averill, B. G. Stokes, James Stringer, Birdsey Blakeman, U. J. Smith, Francis R. Tillou, John Cook, jun., Ezra White, Joseph B. Sheffield, James Conner, Amos F. Hatfield, C. Champlin, James C. Derby, Robert Halsted, F. R. Fowler, D. F. Baker, John Groshon, Thos. J. Powers, Walter Storm, John Wade, Amos Johnson, Timothy G. Churchill, Alex. J. Bogart, C. S. Putnam, E. Parmley, R. C. Fellows, F. Strube, Joseph Sampson, S. Baldwin, Jay Otis Averill, Wm. E. Dodge, W. Gale, W. A. Townsend, J. F. D. Lanier, Chas. M. Wheatley, Dallet Bliss, D. S. Manners, John Sherman, Chas. H. Fellows, Horace H. Day, Griffith Thomas, James Salmon, John A. Bunting, Henry L. Pierson, John J. Herrick, Wm. Niblo, A. A. Wood, E. S. Weld, W. P. Fetridge, John B. Breed, John I. Kelly, Chauncey Schaffer, Edward H. Parker, M. D., Edmund H. Miller, William Detmold, M. D., D. Talmage, Jacob Row, S. S. Fitch, M. D., W. R. Travers, S. Jaudon, Cornelius A. Walke, R. G. Mitchell, Wm. C. Annan, P. B. Ballow, Rich'd Berry, O. H. Schreiner, George S. Robbins, James French, John J. Palmer, Le Grand Lockwood, E. J. Oakley, Albert H. Nicolay, H. A. Johnson, A. Gescheidt, M. D., Richd. Warren, Geo. Clay, W. Miner, M.D., H. B. Tibbits, Robt. Carter, Isaac V. Fowler, Thos. Fraser, Preston Sheldon, Ten Eyck Sutphen, Henry Fernback, John M'Killop, W. H. Van Buren, J. K. Warren, Geo. M. Knevitt, F. H. Clark, Gerard Stuyvesant, A. Oswald Brodie, jun., Benjamin J. Pentz, A. W. Whipple, Lawrence Waterbury,

Saml. C. Ellis, M.D., T. S. Negus, J. W. Schmidt, M.D., J. Jarvis, A. R. Mount, John E. Williams, Robt. Colgate, G. De Angelis, Isaac J. Greenwood, Henry Elsworth, W. H. Elphinston, W. S. Nichols, Wm. Curtis Noyes, J. Hancock Douglass, Albert Clark, Rev. D. S. Denison, William Hoge, D. Sheppard, W. E. Hawes, James Bleecker, Silas C. Herring, Luke Harrington, James O'Brien, Chas. C. Colgate, Edward G. Fail, James Hunter, John D. Abrams, W. C. Schermerhorn, H. G. Stebbins, Isaac Seymour, Richard T. Deming, A. H. Griswold, G. W. Leake, R. A. Tooker, Allen N. Leet, B. G. Wilder, Geo. Ellis, A. S. James, Robt. Dillon, Edmund Penfold, Gilbert Potter, jun., Thos. R. Minturn, H. M. Forrester, Geo. Wm. Curtis, John Thomson, and Benjamin H. Field and Wm. Agnew, jun., as life members, who were severally elected members of the Society.

Mr. Disturnell stated that he had, during the last summer, visited the Upper Lakes; and that at a future time he would present to the Society the charts of that region, executed under the Topographical Bureau at Washington. Adjourned.

Meeting, 6th Nov. 1856, F. A. Conkling, Esq., in the Chair. The minutes of the last meeting were read and approved.

The Council through their Chairman, reported the names of the following gentlemen for election as Honorary Members of the Society, which report being approved, they recommended for election by the Society, viz.: Baron Alexander Von Humboldt, Berlin, Prussia; Sir Roderick J. Murchison, G. C. St. S., M. A., D. C. L., F. R. S., &c., 16 Belgrave Square, London, England; Dr. Elisha Kent Kane, U. S. N., United States; Prof. Carl Von Ritter, Berlin, Prussia; Col. Henry C. Rawlinson, C. B., London; Prof. A. Th. Middendorff, Russia; M. De La Roquette, Paris, France, Sir Geo. Simpson, Gov. of the Hudson Bay Company, Montreal, Canada; Rev. Edward Robinson, D. D., United States; Lieut. M. F. Maury, U. S. N., United States; Dr. Heinrich Barth, Gotha, Germany; Prof. Otto

Von Struvé, St. Petersburgh, Russia; Dr. Aug. Petermann, Berlin, Prussia; Austin H. Layard, Esq., D. C. L., England; Prof. M. B. Keilhau, Russia; Prof. A. D. Bache, United States, U. S. Coast Survey; Lambert A. C. Quetelet, Mem. Acad. Royal des Sciences à Brussels, Brussels, Belgium.

The Council also reported that the following amendment to the By-Laws of the Society, was proposed at a Meeting of the Society on the 10th of April, 1850, by Mr. Henry V. Poor, to wit: Add to Article III, of the By-Laws, the words, "any Member before payment of his Initiation *Fee*, may become a Life Member upon the payment of the sum of *fifty* dollars, which shall be deemed inclusive of Initiation Fee, and all future annual dues. And any Member, subsequent to the payment of his Initiation Fee, may become a Life Member upon the payment of *fifty* dollars, which shall be in lieu of all annual dues."

And the Council would further report, that on 30th ult., Mr. Jay, in Council proposed an amendment to the By-Laws of the Society as follows:

Add to Article V. of the By-Laws, the following words, viz.: "at each Annual Meeting, a written report shall be submitted to the Council respecting the proceedings of the Society during the past year, and also a written report by the Corresponding Secretaries, Librarian, and Treasurer, in their respective departments."

Said proposed amendments having received the approbation of the Council, they are now submitted for the approval of the Society, to be entered on the minutes, to be taken up for action thereon at a subsequent Meeting of the Society.

And the Council further report, that on motion of Mr. Bean, they approve of the nomination of Mr. Samuel D. Dinsmore; on motion of Mr. Conkling, the nomination of Lorillard Spencer; on motion of Mr. Jay, the nomination of Mr. Henry Heiser; on motion of Mr. Poor, the nomination of Mr. J. P. Kirkwood—all as Ordinary Members; and the Hon. Edward Everett, as proposed by Dr. Hawks, as a Cor-

responding Member, was recommended to the Society for election.

The Report was accepted, the amendments proposed to the By-Laws noted for action at a subsequent meeting, under the rule, and the several gentlemen recommended in the report for election as ordinary, corresponding, and honorary members, were duly elected.

On motion of Mr. Waddell, the amendment noted to Article III. of the By-Laws of the Society, was adopted as an amendment of the By-Laws.

On motion of Mr. Waddell, it was resolved that a Committee of three be appointed to nominate as officers of the Society for the annual election to be held on the 4th of December next; and Messrs. Waddell, Pierrepont, and Russell, were appointed as such committee.

The Committee on Topics and Proceedings, through Mr. Waddell, reported that the Committee were making arrangements to have papers read before the Society during the ensuing season, upon each Thursday evening, and proposed commencing the course on Thursday evening Dec. 4th.

Which report was accepted.

Mr. Poor presented to the Society on the behalf of Mr. Colton, the second volume of Colton's Atlas, just published. Adjourned.

Meeting, Dec. 4th, 1856. The President in the Chair.

The minutes of the last meeting were read and approved.

Report from the Council was read approving of the names of gentlemen, and proposing their election as members of the Society, to wit:

As Ordinary Members: Silas Holmes, Benj. M. Whitlock, George Folsom, Daniel G. Mason, John Trenor, Edward Vincent, Isaac Ames, Loomis Ballard, Edm. Pavenstedt, Wm. Edward Vermilye, Robert Emmet, John Ferguson, Abner L. Ely, Francis C. Walker, Edwin R. Tremain, Edwin A. Oelrichs,

Mortimer Porter, Watts Sherman, George J. Sanger, Andrew E. Douglass, Thos. Addis Emmet, William Furniss, L. S. Belloni, Robert Lane, Wm. W. Cornell, Jasper Corning; and the Hon. John C. Fremont, as Honorary Member.

An omission having occurred in noting on the records of the Society the election of Paul Chaix, of Geneva, and Col. Thos. W. Ward, as Corresponding Members, on the dates of March 22d, 1853, and January 4th, 1855, the Council recommended that these gentlemen be elected as of these dates.

The Council recommended the adoption of the amendment of the By-Laws proposed in Society Nov. 6, 1856, by Mr. John Jay.

The above report of Council was accepted and ordered on file, and the amendment to the By-Laws therein referred to, adopted.

Mr. Waddell read the Annual Report of the Council, made in conformity with the amendment to the By-laws; whereupon the President congratulated the Society upon its prosperous condition as exhibited in the report, and the same was accepted and ordered on file.

The Treasurer's Report was read by the Treasurer, Ridley Watts, Esq.; the same was accepted and ordered on file.

The Librarian's Report was read by the Librarian, and was accepted and ordered on file.

The Report of the Domestic Corresponding Secretary was read, with letters from Henry D. Gilpin, John H. Alexander, Robert M'Cleland, John J. Meehan, Aaron H. Palmer, and Professor Guyot, accepting their election as corresponding members.

The Committee on Nomination of Persons to be voted for as Officers of the Society for the ensuing year made their Report, which was accepted and ordered on file.

On motion, the Society proceeded to the election of officers for the ensuing year.

Messrs. Jones and Disturnell were appointed by the chair

to receive and count the votes; who reported. The following gentlemen were unanimously elected to the respective offices named, for the ensuing year:

President.—FRANCIS L. HAWKS, D. D., LL. D.

Vice-Presidents.—ALEXANDER W. BRADFORD, HENRY GRINNELL, and ARCHIBALD RUSSELL, ESQS.

Foreign Corresponding Secretary.—JOHN JAY, ESQ.

Domestic Corresponding Secretary.—F. A. CONKLING, ESQ.

Recording Secretary.—WM. COVENTRY H. WADDELL, ESQ.

Assistant Recording Secretary.—SAML. P. DINSMORE, ESQ.

Treasurer.—RIDLEY WATTS, ESQ.

Librarian.—MARSHALL LEFFERTS, ESQ.

Council.—HIRAM BARNEY, HENRY V. POOR, HENRY E. PIERREPONT, M. DUDLEY BEAN, J. CALVIN SMITH, GEORGE FOLSOM, ABRAM S. HEWITT, RUDOLPH A. WITTHAUS, and EGBERT L. VIELE, ESQS.

The President then introduced to the Society the Hon. T. Butler King, who read the paper of the evening, on the "Railroad to the Pacific."

At its close, a conversation took place as to the views set forth by Mr. King, in which Messrs. Redfield, Disturnell, Russell, the President, and Mr. King took part.

After which, on motion of Mr. Barney, seconded by Mr. Grinnell, the thanks of the Society were voted to Mr. King.

Mr. Disturnell presented from the author a copy of the History of Herkimer County, N. Y., and the Upper Mohawk Valley, by Nathaniel S. Benton, and from himself maps of Essex and Clinton Counties, N. Y. The thanks of the Society were presented to these donors. Adjourned.

Meeting, Thursday, December 11, 1856, the President, in the chair.

The minutes of the last meeting were read and approved.

Mr. Russell, from the Council, reported the names of

the following gentlemen as having met the approval of the Council, and recommended for election by the Society, to wit: Frederick Schuchardt, Meyer Gans, Valentine G. Hall, Henry R. Remsen, John Maxwell, James B. Johnston, John Bull, Wm. Cousland, James R. Chilton, Bern. Westerman, Sidney Mason, Charles R. Degen, Egbert Gurnsey, M. D., John D. Clute, Capt. Melancthon Smith, U. S. N., William T. Coleman, John H. Hand, Charles P. Currie, Edw. B. Little, Alfred H. P. Edwards. All were elected as ordinary members.

Mr. Waddell, for the Librarian, reported the following donations:

"American Missionaries in Greece," one copy, presented by the author, Henry D. Gilpin, Philadelphia. "Report of the Secretary of the Interior for 1856," by the Hon. Robert M'Cleland.

Christopher Oscanyan read a paper descriptive of the Geography, General Character, and History of Armenia; whereupon it was resolved that the thanks of the Society be tendered to Mr. Oscanyan for his paper, and that a copy be requested for its archives.

Meeting, Dec. 18th, 1856, the President in the chair.

The minutes of the last meeting were read and approved.

The Recording Secretary read a report from the Council recommending Dr. Raphall for election as a member of the Society, and suggesting, in view of his services to the Society, that the payment of the initiation fee and annual dues be remitted.

Dr. Raphall was accordingly elected, and the Treasurer was directed to remit the initiation fee and annual dues.

The Domestic Corresponding Secretary made no written report, but stated that he had acknowledged the donations of the Hon. Messrs. Gilpin, of Philadelphia, and M'Clelland, Secretary of the Interior, reported at the last meeting of the Society.

The Librarian reported that books had been received since last meeting from the Austrian government, through Chevalier Hulsemann, its Minister at Washington; 8 vols. of the Statistics of the Austrian empire, and 19 numbers of a Statistical publication, issued under the auspices of the Austrian government.

Also, from the Royal Society London, the Proceedings of the Society, Vol. VIII. Nos. 19, 20, 21, and 22. Also, from the Royal Academy, Vienna, six numbers of its publications; The thanks of the Society were ordered to the several donors.

The Secretary reported the following list of the Committees of the Society.

Select Committee on *Decimal Currency*,—Messrs. Russell, Waddell, and Lefferts.

On Foreign Correspondence and Exchange, Messrs. Jay, Russell, and Witthaus.

To Memorialize the Legislature on the expediency of commencing a Topographical Survey of the State of New York, and instructed to report such memorial to Council, Messrs. Viele, Conkling, and Jay.

To Memorialize the Legislature of the State of New York in favor of a Ship Canal from Lake Champlain to the Hudson. Messrs. Waddell, Watts, and Harrison.

On "Colton's Atlas," Messrs. Poor, Pierrepont, and Russell.

On the Exploration of the Syrian Desert, Messrs. Russell, Poor, and Thompson.

Mr. Viele, from the Committee upon a Topographical Survey of the State of New York, stated that the Committee would present the draft of a memorial at the next meeting of the Society.

The Committee on Colton's Atlas, having performed the duty entrusted to them, was, on motion of Mr. Russell, discharged.

On motion of Mr. Russell, Captain Melancthon Smith,

38.883

U. S. N., was added to the Committee on the Exploration of the Syrian Desert.

The Rev. Joseph P. Thompson, D. D., read a paper giving an historical sketch of the Micronesian Islands, prepared by the Rev. L. H. Gulick, M. D.; whereupon on motion of Egbert Viele, Esq., it was,

Resolved, That the thanks of the Society be tendered to Dr. Gulick therefor, and a copy thereof be requested for the archives of the Society.

On motion of Mr. Waddell, it was,

Resolved, That without the usual reference to Council, Dr. Gulick be and is hereby elected a Corresponding Member of the Society.

The Committee appointed on the 10th of April last, upon the subject of the Improvement of the Champlain and Hudson River Valley, reported the following Memorial, which they had transmitted to the legislature of the State of New York, to wit:—

MEMORIAL

OF THE AMERICAN GEOGRAPHICAL AND STATISTICAL SOCIETY, FOR AN IMPROVEMENT OF THE CHAMPLAIN AND HUDSON RIVER VALLEY.

To the Honorable the Legislature of the State of New York:

The American Geographical and Statistical Society of New York, through the subscribers (a committee duly appointed for that purpose; as per certified copy of the proceedings of the Society hereunto annexed), would most respectfully *memorialize* your Honorable body, in behalf of an improvement of the Champlain and Hudson River Valley, by the means of a ship canal, connecting the river St. Lawrence and all the great lakes lying on the northern boundary of our confederacy with the Atlantic Ocean in the Bay of New York.

This project is, as you are well aware, not new in its inception, having at various times before been entertained by wise legislators and scientific men; but now, at a period when the great energies of the State are about being brought into more efficient action by

the enlargement of its internal artificial channels, thereby affording greater facilities for the transmission of the enormous products of the Western States to your great commercial emporium at the sea, we would most respectfully urge the same upon your consideration, and pray that the necessary legislative and executive action may be had thereon.

Your memorialists, in thus fulfilling the duty imposed on them, cannot perhaps more fully or clearly impress the views which actuated this Society in adopting the resolution which empowers your memorialists to address you, than by annexing a copy of the paper from their archives which elicited their action at that time.

And as in duty bound they will ever pray, &c.

WM. C. H. WADDELL,
THOS. F. HARRISON,
RIDLEY WATTS,
} *Committee.*

NEW YORK, December 4th, 1856.

Adjourned.

PAPERS READ BEFORE THE SOCIETY.

[The Society do not hold themselves responsible for matters contained in the papers read before them.]

ARTICLE I.

THE ANNUAL ADDRESS;

Being a Paper upon the Gulf Stream, read by PROF. A. D. BACHE, *Superintendent U. S. Coast Survey, Jan.* 27, 1856.

THE Norwegian peasants who found upon their coast strange fruits, or grains of kinds which the earth in that region did not produce, and carefully preserved them as curiosities,* were in possession of evidence that the waters of those seas had at some time washed the shores of the tropics. The fishermen of the coast of Scotland had, in the logs of cotton-wood thrown upon their shores, the same proof. The routes by which the fruit or the tree came were in a degree conjectural; but the botanists knew that it had grown in a more genial clime than that to which the current had brought it. Such facts were early known and commented upon, and even pressed into the service of the hypothesis of a northwest passage.† They were, however, generally recognized as proving the presence of the waters of Southern North America upon the shores of Northern Europe.

The great part which the heat of the sun plays in disturb-

* Geographie Botanique (Alph. de Candolle), p. 616, Causes de Transports, &c.

† Phil. Trans. (London), abridged, vol. x. (orig.) 1675.

ing the equilibrium at the surface of our globe, is well understood. Wherever he shines upon the surface the air resting upon it is set in motion; so that the circle of the sun's illumination, as it advances over the earth, is a circle of disturbance.

It is beautiful, on some calm summer's morning, just as the day has begun to dawn, to look from the top of a high hill upon the quiet of the plain below. The air has gradually cooled during the night, and the valleys are filled with dense cool air, quite quiet, with fog hanging over every stream and lake and pond, showing the secret course of the stream along the landscape and the hidden basin of the lake. The light grows stronger; and as the first rays of the sun touch this peaceful scene, it is thrown into movement. The fog-clouds rise and fall again; they spread, covering the hilltops, which just now were bare, thinning out as they rise with the rising of the sun, and become at last a thin haze spread over the whole scene. The masses of fog serve to show that the air has been in motion, for they have risen and fallen with it. The currents mingling air of different densities, light no longer penetrates directly and easily through it, but objects are seen waving to and fro. Dimness and distortion are the results; or the light is lost, and objects disappear entirely, as if unilluminated. In the great belt of the earth within which the sun travels in his annual course, standing still and turning back when he reaches its limits, this action has a form and regularity which to us of the temperate regions has no parallel. The coaster and the landsman of the temperate regions are used to consider the wind as something uncertain, the laws of which it may be well for men of science to study and endeavor to explore, but which may be "past finding out."

Strange the emotions of such men when in the tropics they first find themselves hopelessly to leeward! The constant blowing of the eastern trade is invariable as the progress of the sun, showing almost as certainly his position as the hands of a watch the time—his daily, weekly, annual progress. These currents of air carry the waters forward with them from east

to west, and when they meet the land, great currents are produced, and taking their direction from the land, carry the waters of the equatorial regions to the north and south temperate seas, to be returned in those great systems of circulation, some of which have long been known to navigators and geographers, and others of which remain yet imperfectly developed. Two of the most important of these—one of the North Atlantic and the other of the North Pacific—will form the subjects to be brought before you on successive evenings,—the one the American Gulf Stream, and the other the Asiatic Stream; the first making, as is most probable, the circuit of the Gulf of Mexico, its name indicating the view of geographers as to its origin, issuing through the Straits of Florida, gradually leaving our coast, and seeking that of Europe; the main stream to return by a counter-current to the tropical regions in which it was first produced, the branches recognizable in the northern seas of both America and Europe. The second, as traced by Lieut. Bent, from the notes of our Japan expedition under Commodore Perry, deflected to the north by the shores of Formosa, passing along the coast to the northward and eastward, and leaving it at the projecting portion of the coast of Japan, as our stream does the coast of North Carolina at Hatteras.

I do not propose in this Address to attempt a complete history of the progress of discovery in regard to the Gulf Stream; nevertheless, a brief notice of it is almost essential.

Ponce de Leon, in 1512, sailed through the channel between Florida and Cuba, passed through the strait, and followed the Gulf Stream as high as St. Augustine. In 1519, the famous pilot of Cortez, Antonio de Alaminos, passed by the same route, and keeping for the greater part of the voyage in the Stream, carried the news of Cortez's conquests to Europe. "He must be regarded as the real discoverer of the Gulf Stream as a great oceanic highway."*

* Letter of Dr. J. G. Kohl, to Superintendent of Coast Survey, January, 1856.

The first delineation of which I have any knowledge, though it is altogether probable that there were attempts made to show different parts of it at an earlier date, was that made by Dr. Franklin, in 1769–70, from the information communicated by Captain Folger, of Nantucket, commanding a whaling vessel from that port. The details are so interesting that I insert it, as a remarkable instance of practical sagacity on the part of the fisherman and the philosopher:—

"Vessels are sometimes retarded and sometimes forwarded in their voyages by currents at sea, which are often not perceived. About the year 1769–70, there was an application made by the Board of Customs at Boston, to the Lords of the Treasury in London, complaining that the packets between Falmouth and New York were generally a fortnight longer in their passages than merchant ships from London to Rhode Island, and proposing instead of New York that for the future they should be ordered to Newport. Being then concerned in the management of the American Post-office, I happened to be consulted on the occasion; and it appearing strange to me that there should be such a difference between two places scarce a day's run asunder, especially when the merchant ships are generally deeper laden and more weakly managed than the packets, and had from London the whole length of the river and Channel to run before they left the land of England, while the packets had only to go from Falmouth, I could not but think the fact misunderstood or misrepresented. There happened then to be in London a Nantucket sea-captain of my acquaintance, to whom I communicated the affair. He told me he believed the fact to be true; but the difference was owing to this, that the Rhode-Island captains were acquainted with the Gulf Stream, which those of the English packets were not. 'We are well acquainted with that Stream,' said he, 'because in our pursuit of whales, which keep near the sides of it but are not to be met with in it, we run down along the sides, and frequently cross it to change our side; and in crossing it, have sometimes met and spoke with those

packets, who were in the midst of it and stemming it. We have informed them that they were stemming a current that was against them to the value of three miles an hour, and advised them to cross it and get out of it; but they were too wise to be counseled by simple American fishermen. When the winds are light,' he added, 'they are carried back by the current more than they are forward by the wind; and if the wind be good, the subtraction of seventy miles a day from their course is of some importance.' I then observed it was a pity no notice was taken of this current upon the charts, and requested him to mark it out for me; which he readily complied with, adding directions for avoiding it in sailing from Europe to North America. I procured it to be engraved, by order from the General Post Office, on the old chart of the Atlantic, at Mount & Page's, Tower Hill; and copies were sent to Falmouth for the captains of the packets, who slighted it, however; but it has been since printed in France, of which edition I hereto annex a copy.

"This Stream is probably generated by the great accumulation of water on the eastern coast of America between the tropics, by the trade-winds which constantly blow there. It is known that a large stream of water, ten miles broad, and generally only three feet deep, has, by a strong wind, had its water driven to one side and sustained, so as to become six feet deep, while the windward side was laid dry. This may give some idea of the quantity heaped upon the American coast, and the reason of its running down in a strong current through the islands into the bay of Mexico, and from thence issuing through the gulf of Florida and proceeding along the coast to the banks of Newfoundland, where it turns off towards and runs down through the Western Islands. Having since crossed the Stream several times in passing between America and Europe, I have been attentive to sundry circumstances relating to it, by which to know when one is in it; and, beside the Gulf weed with which it is interspersed, I find that it is always warmer than the sea each side of it, and that

it does not sparkle in the night. I annex hereto the observations made with the thermometer in two voyages, and may possibly add a third. It will appear from them that the thermometer may be a useful instrument to the navigator; since currents coming from the northward into southern seas will probably be found colder than the water of these seas, as the currents from southern seas into northern are apt to be warmer."*

The quaint device which bears the title of the map in one corner, shows the American philosopher (an unmistakable likeness), chiding Neptune, the index finger raised with much authority, while the sea-god, though holding fast to his trident, is plainly crest-fallen.

The chart drawn by Franklin expresses exceedingly well the inner limits of the Gulf Stream, as we now know them. We shall see that the passage from cold water to warm on the inner side is so abrupt at the depth most sought by the whales, that the indications from their frequenting the region would have been somewhat of the same order of accuracy as that of the thermometer at the surface.

The observation of Franklin, that the water of the Stream was warmer than that of the ocean near it, introduced the use of the thermometer in navigation. His results were consigned to the very unpretending little manuscript book which I have now the honor to show to the members, and which I found many years ago in a trunk of miscellaneous papers, where it had lain neglected for one generation. The interest awakened by Franklin in this subject was so great that Col. Jonathan Williams,† afterward chief of the Corps of Engineers of the United States, William Strickland,‡ and John Hamilton,§ with several others, followed in his wake, and collected many careful observations in voyages between the United States and

* American Philos. Trans. vol. ii. old series.
† Ibid. vol. iii.
‡ Ibid. vol. v.
§ Ibid.

Great Britain, and along a part of our coast. These observations were directed to the limit of the Stream, its temperature, as compared with the air above it and with the ocean water adjacent to it, at different seasons of the year and in different years, the direction and force of its current, &c. The observers also embraced other results in their researches, which it is not at present necessary to dwell upon.

The observations of numerous British and American navigators in private and public vessels, observing either from motives of interest and curiosity, or by official instructions, were collected and digested by Major Rennell, in his "Investigation of the Currents of the Atlantic Ocean," published in 1832, after his death, from his notes, by his accomplished daughter.* This work is accompanied by an atlas containing elaborate charts of the currents of the North Atlantic, and representing the observations of different navigators, chiefly in the service of the British Admiralty. All these observations, with few exceptions, were confined to the surface or to very moderate distances below it; and it is easy to see that the surface does not present the best conditions for investigation. Major Rennell was aware of this, and recommended deeper explorations.

Berghaus' Physical Atlas, an edition of which by Alex. Keith Johnston, of Edinburgh, is best known in our country, contains a *resumé* in his map of what was known in regard to this Stream up to 1848; which, though quite incomplete, seems to give a general idea of the direction, extent, and velocity of the current.

Copious materials have been collected by Lieut. Maury, in his current charts, and deductions from them have been presented at different times in his sailing directions, in the proceedings of the American Association for the advancement of Science, in his address before this Society two years since, and

* An "Investigation of the Currents of the Atlantic Ocean," &c., by the late Major James Rennell, F. R. S., &c., London, 1832.

in other publications. A memoir by the same officer, containing many ingenious suggestions, is among his early papers in the "Southern Literary Messenger."

I might, perhaps, be expected here to pass in review the claims to have advanced our knowledge of the Gulf Stream, covering the same period of time with the researches of which I propose to give you an account; but this history cannot be written now, nor perhaps at all by me. The best mode to arrive at truth is fairly to state facts, and this done by each one, to leave to others to adjust the merit or demerit of the several suggestions, plans, discussions, and developments.

As the temperature of the Gulf Stream is one of its most striking and important features, so it was to the investigation of it that I determined first to direct the attention of the officers of the Coast Survey. The current was to be observed, —its direction and force; the density, color, and other peculiarities of the water; the vegetable and animal productions were to be collected; the meteorology to be studied;—but these were to be subordinate to the main object of inquiry, namely, the temperature of the water.

To have observed the surface temperatures merely, with instruments carefully prepared, would have been a step forward; for without such comparisons the results could only be considered as rough, and merely to be employed in the absence of better ones. At the surface, too, the heating effects of the sun, the effects of the temperature of the air, of wind and of rain, are the greatest. It was necessary, in a systematic exploration to go below the surface. At a certain distance these disturbing actions might be expected to diminish, and at certain seasons to cease altogether. Besides, it was likely that this Stream extended only to a certain depth, and that part of the return northern current followed the bottom of the sea. The interest in the deep-sea temperatures proved, in fact, most absorbing; and every effort was directed towards obtaining an instrument for their ready investigation. The great pressure to which such an instrument would be subjected ren-

dered this no easy matter. The instrument must register its indications; it must be easily used, and therefore of the class requiring a simple observation, not a philosophical experiment. The ordinary self-registering thermometer was first tried, and to secure it from pressure it was placed in a globular case. This thermometer required quite a long time to take the temperature of the sea around it, the case keeping it from immediate contact with the water. Besides, at quite moderate depths the envelope, unless of unwieldy thickness, was crushed; and this was true, when to diminish the size of the apparatus we resorted to small metallic thermometers, like those made by Jungernsen, of Copenhagen, and by Montardon, of Washington. There must be an opening to introduce the thermometer into the envelope; and this opening—however tightly it might be made to close, by grinding on, by the interposition of India rubber, or other material fulfilling a similar purpose—changed its figure under pressure, and the costly thermometer inside was crushed, or salt water was forced into it, destroying its delicate parts. It would detain you too long to note the various contrivances which the ingenuity of our hydrographers and mechanicians produced, and how the modes which succeeded best with one observer came out only second or third best with another. We must reach depths beyond which Six's self-registering thermometer would give way, or their indications become erroneous. After many experiments Saxton's self-registering thermometer superseded all others, and the attention of its ingenious inventor was turned to perfecting its details. It consists essentially of a coil of two metals, like Brequet's metallic thermometer, the more expansible placed in the interior; its form, scale, covering, and, in short, all its details, being adapted to the use for which it is thus designed. The coil, fastened at one end, unwinds when the heat increases, and tightens when it decreases; so that by placing upon the fore-end of the coil a hand, like that of a watch, to move upon a dial plate, the temperature is seen. It registers, by the simplest of all con-

trivances, either the highest or lowest temperature to which it has been exposed, or both the highest and the lowest. The case is merely to protect the instrument from external injury in use and to support the spiral coil, the scale and hands or indicators. A spiral four inches long of silver and platinum, serves to give a sufficient sensibility to the instrument, so that two-tenths of a degree of Fahrenheit can easily be read upon the dial. The brass and silver parts of these instruments require to be coated thickly with gold; which is readily done by the electrotype process, requiring, however, great care and thoroughness to be effective. Their use demands certain precautions which it would be out of place to state here. No instrument should be made answerable for the want of skill or care of an observer. I can truly say that in the hands of many observers, and used at great depths, these instruments have given entire satisfaction. They have in the Coast-Survey observations superseded all others.

It would seem an easy thing to ascertain the depths to which a thermometer attached to a sounding line had gone. I recollect well that the triumphant objection was made to Ericsson's and to Ogden's leads for sounding, that it was quite simple to measure the length of the line to which the lead was attached. The fact is, however, that at considerable depths the length of the sounding line not only does not give the depth to which the lead at the end of it has been, but does not give even an approximation to it within twenty to thirty per cent. of the truth; under different circumstances not even a constant proportion to the true length of the line. We have found Ericsson's and Ogden's leads very convenient for moderate depths, and Massey's, slightly modified, for greater depths. This is on the principle of Woltman's wheel, which has been applied to similar purposes long ago, and yet leaves something to be desired on the score of sensibility and convenience. The wheel turning as the line descends, and prevented from turning by a catch when rising, the turns are registered by wheel-work, and thus the depth to which the lead has descended is marked upon its scale.

The general features of the Gulf Stream being known, it was a natural idea to refer it to a medial line or axis, on each side of which it would be more or less similar in its temperatures, and therefore to run sections perpendicular to this line across the whole breadth of the Stream. To set out from points on the coast, of well-ascertained position, and determining by the best means known to nautical astronomy the place of the vessel, at the shortest interval practicable; to check if necessary these results by returning to the same or another known point; to occupy positions at which the temperature at different depths would be determined, the frequency of which would depend upon the greater or less rapidity of the change of temperature; to determine at the several positions the temperature at depths varying more or less rapidly as the temperatures themselves were found to vary, attaching several instruments at moderate intervals for observations at small depths, at larger intervals for greater depths,—such was the general plan of exploration pursued in the Coast Survey.

In regard to the season for explorations, the summer was of course on every account to be preferred for the greater part of the Stream. The season of cold and storms, which renders navigation perilous, and interferes with work, is also that when, the Stream cooling rapidly from the air above it, the surface water descends, and, mixing with the warm water below, disturbs essentially the equilibrium of temperatures.

Sounding in stormy weather is a very difficult, if not impracticable operation, yielding with much labor very inaccurate results. Of course a complete exploration requires that the changes of the seasons be investigated; but to add to the essential difficulties of the unknown features of the Stream those of navigation in storms, would have been to task the observers beyond endurance. It has turned out that if we had braved the winter season in our early work, the confused state of the temperatures at different depths below the surface would have impeded the study of the results, and

have caused us probably to miss some of the most beautiful and striking of the generalizations.

Important as is the Gulf Stream to the navigator of our coast, and forming as it does one of its most marked hydrographic features, still it was only a part of the work of the Coast Survey; and to have given an undue share of means and attention to these researches at the expense of the soundings of the harbors, bays, sounds, and sea-coast, would have been manifestly injudicious. Hence, these researches have been prosecuted by piecemeal, and from time to time, but always with a steady aim, so that even partial results contributed to the accomplishment of the general design.

It would be of more personal than general interest to speak of the instructions for making the observations, of those in regard to instruments, to the mode of representing the results in tables and diagrams, to the phenomena that were to be looked for, and to the mode of study of the observations.

The chiefs of hydrographic parties of the Coast Survey, to whom the work has been entrusted, have, in most cases, been selected for it in consequence of some special aptitude, and generally as volunteers. The first officer who entered upon the field was Lieutenant (now Commander) Charles H. Davis, the present accomplished superintendent of the Nautical Almanac. Full of zeal according to knowledge, he made a most successful beginning; and from his observations in 1845 resulted the law of temperature with depths in the cold current between the earth and the Gulf Stream. Bottom was reached at 1,300 fathoms, and a specimen brought up by Lieutenant Davis, in October, 1845. This officer, who had previously been connected with the Coast Survey under Mr. Hassler, rejoined it soon after my appointment, to co-operate in the investigation of tides and currents, which was one of the first of the general hydrographic problems to which my attention was turned. To our joint labors, and those of my late brother, George M. Bache, also one of the hydrographic chiefs of the Survey, are due the first elaborations of the system of

tidal and current observations introduced into the Survey. The early trials of the instruments, selecting those best adapted to the work, their improvement, and the routine in the practical parts of the Gulf Stream exploration, were made by Commander Davis. I well remember the delight with which we both recognized in the distribution of heat in the column of water explored in his first voyage off the coast of Long Island and Nantucket, the law of distribution of heat in a fluid warmed at the top and slowly transmitting, by imperfect conduction, to the lower strata the heat from the surface. It was from no want of interest, but from the necessity for entering upon another and very difficult field of duty, and from a generous preferring of the supposed claims of another, that Lieutenant Davis left this field of research in 1846, after a season's work, and the charge was assigned to Lieutenant Commanding George M. Bache. Of this officer, whose early death while in the successful prosecution of this work we still deplore, I only speak in the terms recognized as strictly just by all his associates, when I say that his turn of mind was peculiarly adapted to grapple with this problem, and that all his energies and resources were bent to its solution. Remarkably fertile in expedients for experiment, delicate in the use of instruments, careful in observations, ready in classifying facts, persevering in their accumulation, apt at generalizing, his mind glowed brighter and brighter as he entered into a course of experiment and observation. In this case his enthusiasm kindled and burned brilliantly. It is most interesting to follow his descriptions of the trials of the instruments, of his methods of observation, and of his tentative results. To see how perfectly he identified himself with the investigation,—now the navigator, attending to his vessel; now the experimental philosopher, caring for and watching and trying his instruments; now the man of science, looking at, connecting, generalizing the results. We owe to him the discovery of that sudden change of temperature from the inner cold current to the Gulf Stream, which became so marked at mod-

erate depths as to deserve the name which he gave it, of the "cold wall." Writing to me, he says,—"I would like to be with you when you look at and admire this section,—for admire it you must,—and speculate on it with you. Here on the left we have the main current of the Stream turned to the eastward by Cape Hatteras, and butting up against a bank of cold water, which it overflows, and on the right mingling with a vast reservoir of warm water, which is probably brought there by the eddies from the Stream itself. How beautifully the line is defined to the left, or westward! and how well the observations of the 2d of August come in to verify the others! I hit upon this by having the marine thermometer going to the depth of thirty fathoms, and as soon as it brought up warm water, hove to and made the observation. The tracing of the cold wall from Hatteras up, will be highly interesting, and will lead to useful practical results if it is permanent: and can it be otherwise? It will afford an excellent sea-mark; and I think a near approach may be indicated by surface temperatures. At all events, a depth of thirty fathoms will do it, unless the stratum of warm water deepens, owing to wind or the season. Although we had worked pretty hard for the last three weeks, I hoped we might be able to get another section completed before returning to port. The principal reason for my abandoning this is, that the chronometers begin to differ, and I am afraid to trust to them too long; added to this, a gale sprung up on the 3d, one of the most violent ones we encountered. It was from the eastward, against the current, and we were in the strongest part of the Stream. It blew very hard, and we came out of the Stream at the rate of ten miles an hour, under close-reefed topsails and reefed foresail."

We also owe to this officer the discovery of intrusive cold water in the midst of the hot water of the Gulf Stream, which seemed at first to point to a division of the Stream into two branches by a cold stream.

His observations have stood remarkably the test of subse-

quent researches; and with all the improvements since, of nine years in methods and instruments, his investigations of the Sandy-Hook, Cape-May, and Cape-Henry sections, are admitted to be the very best and most thorough of those on record in the Survey. A depth of 1,500 fathoms was supposed to be reached in those soundings without finding bottom, the temperature being 37 deg. Fahrenheit, and 2,100 fathoms with a temperature of 40 deg., just below the axis of the Gulf Stream. It was his zeal for this work, the desire to make two additional positions in returning to the coast, which his investigations show to be necessary, that exposed him to the hurricane of September 8, 1846, in which his vessel was nearly wrecked and he was swept from her deck never to regain it. His coolness in this terrible emergency enabled him to take such precautions as ensured the safety of the records of his observations, and to perpetuate his name in connection with the history of the Gulf Stream explorations.

The work thus well begun was continued in 1847 and 1848 by Lieuts. Commanding S. P. Lee and Richard Bache, and with faithfulness and success. The results of Lieut. George M. Bache were confirmed by their observations on the Cape-Henry section; and valuable results were obtained in regard to the limits of accuracy in observing, and to the probable limit of change in position of the parts of the Stream. To these results I shall have occasion to refer again. Lieut. Bache had first the use of a steamer for the work; not a very efficient one it is true, but a vessel which enabled him in favorable weather to maintain a desired course, to manipulate readily with the sounding line, and gave him steam power to keep the vessel in position and to reel up the line in experimenting.

The exigencies of the Coast Survey suspended these explorations during the next four years; and in 1853 they were vigorously renewed by the detail of two parties for their continuance,—that of Lieut. Maffitt, in a sailing vessel, and of Lieut. Craven, in a steamer. Lieut. Maffitt took up the

survey where it had been left at Hatteras, running again, for comparison, the Hatteras section, then that from the Cape Fear, then that from Charleston. The labors of his party were rewarded by the discovery, on the Charleston section, of two ridges of hills beyond the main branch of the Gulf Stream, and furnished the observations from which I have drawn the conclusion as to the connection, in that portion of the Stream, of the form of the bottom and the distribution of the warm and cold water. Lieut. Craven had been engaged in the sections across from Cape Canaveral, St. Augustine, and St. Simons, Georgia. Upon the section from Cape Canaveral, he had made the discovery of sounding on the other side of the Gulf Stream; and had tracked the banks or more properly range of hills on the other sections, finding the same results as Lieut. Maffitt on the Charleston section, within a few days after the party of Lieut. Maffitt had determined them. To these officers jointly, the discovery of this important and interesting fact must be awarded. It is difficult to separate them in it.

Lieutenant Commanding Craven has since, with great skill and perseverance, re-examined the St. Simons and Canaveral sections. During the last summer he carried soundings across from Cape Florida to Bemini, proving that no greater depth existed than 370 fathoms, and refuting one of those fabulous ideas in regard to the bottom of the sea, which vague conjecture had first emitted,—ideas which would assign different general physical features to the surface of the earth, above and under the water. Lieutenant Craven also found at 370 fathoms, in the straits of Florida, a temperature of 35 deg. Fahrenheit, showing the existence of the Polar current, beneath the warm water of the Stream, as low as latitude 25½ degrees north.

In the course of so long a series of explorations, in which so many willing minds have been employed, the methods, instruments, records, indeed all that pertain to the work, have been greatly improved, and the whole is now reduced to comparative system.

The greater part of the original records, when reduced to form, will be published through the liberality of Congress, monuments of the industry and intelligence of the hydrographic officers of the Coast Survey.

That this service is one of no small hardship and difficulty may easily be conceived; that it is one of great exposure, in the small vessels of the Survey necessarily encountering the most boisterous seas, may be realized—by the fact that the exploration of one part of the Stream has been attempted three times without success, such rough weather setting in as to deprive one officer of the instruments, and to damage the engines of the steam-vessels in two other cases, so that their commanders were obliged to put back; by the danger run by Lieut. Maffitt in the steamer Legare, barely reaching port in safety by intense exertion of officers and crew to keep their vessel afloat; and by the sad disaster which deprived the Coast Survey and the Navy of the services of Lieutenant George M. Bache. The duty is most hazardous. Success most gratifying.

The deductions which I have made from time to time from the Coast Survey observations, and have presented to the examination of my scientific brethren, have occupied many months at intervals, and will be published in detail with the observations themselves; in the arrangement of this work and the comparison of results, in careful investigations and reductions, and in faithful and skillful tracing out of the phenomena on diagrams, I have derived much assistance from Professor Pendleton, U. S. N., to whom I desire here to make public acknowledgment.

The diagrams in which the results are represented, and upon which it has been found convenient to study them, are of a simple form. On the ordinary chart, such as is now presented, are delineated the line of the section, referred to by the name of the nearest cape or other well known locality near which it passes, and the positions at which the temperatures at different depths have been ascertained. The law of

change of temperature with depth is shown by the next diagram, in which the depths are figured at the side, and the temperatures, in degrees of Fahrenheit's scale, at the top. The changes of temperature at the same depth and in different positions, are given in the next diagram, where the scale of temperature is at the side, and the positions are plotted in nautical miles from the coast at the top. In this the different curves show the changes of temperatures at the same depths, rising and falling on the diagram as the temperature rises and falls. The curves showing the temperature at the surface, 50 fathoms, 100 fathoms, &c., are distinguished severally from each other. The depths at which the temperatures are the same are shown in the next diagram, which also serves to give the form of the bottom of the sea, where it has been ascertained. The depths are written at the side, and the positions, as before, at the top, the distance from the coast in nautical miles being expressed by the scale. The curves for each five degrees of the thermometer are marked so as to distinguish them from each other. When the results are generalized by these diagrams they are ready to be entered upon the general chart, upon which the section was already marked and the position of observation placed. This all seems very plain, but not a little study has been expended to bring it into so simple a shape.

The law of the change of temperature with depth is expressed, more or less perfectly, in all the observations. Suppose the temperature ascertained by observation as in the diagram, at the surface, at ten, twenty, fifty, one hundred, two hundred, three hundred, five hundred, one thousand, fifteen hundred fathoms, the depths marked at the sides, the temperature at the top, and vertical lines drawn through the points of temperature observation downwards until they reach these depths on the scale, the intersections being marked and the curve drawn. This shows at once to the eye the law of change. There are two classes of curves which are expressly typical of the cold current (the Polar current), between the Gulf Stream and the coast, and in the Gulf itself. The first is

shown on the first diagram: descending almost vertically from the surface, it expresses that the temperature changes very little to five or ten fathoms; then rounding, it shows a moderate degree of temperature to some ten or twenty fathoms; then running rapidly toward the vertical line on the left of the diagram, which corresponds to a temperature of thirty-two degrees Fahrenheit, as it descends it shows within the next thirty fathoms a very rapid rate of decrease of temperature; gradually slackening as it approaches the left-hand line, the sweep begins to approach that line very slowly, so that bewteen 200 and 1,000 fathoms it has passed through only a few degrees. The first portions of the curve are those where the waters mix, a region of disturbance, where only under very favorable circumstances nicely rounded lines are found; the worst possible places to study the phenomena, the rapidly varying parts of the curve, correspond to the overflow of the Gulf-Stream water, which seeks the sides as it flows onward, turning to the coast on one side and to the broad Atlantic on the other. The long tongue is the water from the Gulf; the cold water slowly flowing at the bottom of the sea, and which, when it reaches Cape Florida has only a temperature of 37 to 40 deg., is the Polar current, slowly heating up from the warmth above it, as it flows towards the tropics. The intermediate portions may be considered as between two strata, one of warm and the other of cold water, and as slowly transmitting the heat downward.

Now, we know when heat is slowly transmitted downward in a mass of fluid by conduction, that as the depths increase in arithmetical progression, the temperatures decrease in geometrical progression. The curve representing this logarithmic, and the number expressing the conduction of the fluid, is the modulus of the system of logarithms.

I know that some doubt was thrown by certain experiments upon this law; but really the beautiful results of Despretz, by which it was proved, could admit of no doubt. It requires patience to verify, and care and well-chosen processes to get rid of sources of error almost inseparable from such

experiments. Those properly observed, the law comes out, as has been proved since the doubt was raised.

Here we have upon a beautiful scale, and with ample time for equilibrium to take place, the whole story told of conduction through a mass of salt water. The curves are from a certain depth unmistakably logarithmic; and the observations, thrown into the form for computing by the most impartial of methods,—that known to mathematicians as the method of least squares,—give results differing less than the unavoidable errors of observation from those directly observed, and yielding, when the averages of several curves are united, a modulus by which the conducting power may be expressed. In this slowly-moving cold current from the Polar regions, seeking the bottom, as being the denser, capped by an overflow of the warmer tropical water, you would expect to find just such curves as those which first resulted from the observations of Davis, and were confirmed by George Bache and by his successors.

One feature in these results of considerable interest, is this,—that they were made by officers having no special hypothesis; collecting data from which hypotheses might be made, confirmed, or refuted; fully convinced, no doubt, that law would come out of faithful results, but not particularly interested in the form which it might prove to have. Faithful laborers! it has often struck me when discussing these results to laud them for many things, but never more than for their strict truthfulness.

Time and again this law had been repeated, when Lieut. Craven presented his winter results, with some discouragement that they were so much less regular than the summer ones. The form of curve, as shown in the next diagram, gives nearly the same temperature from the surface down to 100 fathoms. If we reflect that at this season of the year the Stream is rapidly cooling by the colder air, we shall understand this, as the surface strata sink as they are cooled.

So in some of Lieut. Maffitt's results there were irregular-

ities which marked the cooling action on the surface of the Stream, and even a temporary shifting of the upper and lower strata, with respect to each other.

If the winter season had been the one chosen for our first experiment, the navigator would have encountered many difficulties and met with small reward.

If these results be compared with the elaborate observations of Professor Forbes and M. Quetalet, for the determination of the law of change of temperature in the earth, still more confidence will be inspired by them; for we have in these latter, differences, resulting from the nature of the case itself, much larger than that presented by the results of the Coast-Survey officers. The advantage of the fluid medium in adjusting itself rapidly to changes of temperature, is thus clearly manifested.

The next type curve is that which belongs to a position below the axis of the Gulf Stream, and is shown in the next succeeding diagram. It has the same features of the nearly vertical straight line and the short curve, like an arc of a sixth of a circumference, as the other; and it begins to approach the vertical axis on the left hand but slowly, and passes down to a depth of some three or four hundred fathoms before it curves inward with rapidity. The curve almost, at one time, coincides again with a vertical straight line, giving a section which appears in comparison with the others to have a gentle swell; then suddenly turning towards the line of low temperatures, it begins to assume the appearance of the former curve. It has reached the cold water. Now, this form of curve is not that which corresponds to equilibrium of temperature by conduction; nor ought we to find such in the moving mass of Gulf water, which must cool chiefly by mixture of the cooler strata from the surface at one part, and by mixture with the under current in another. The tongue which we saw in the inshore diagrams is in these much thickened, and the lower part is deep below the surface. The thinning off as we go to the shore is due to the thinning off of the tropical waters on that

side, and is marked chiefly as they overrun the Polar current. On the other side they overflow a comparatively warm ocean. Although in a general sense it is thus easy to see the divisions of the water, if we scrutinize it more closely to define the limits we shall find it extremely difficult to do so.

The last form of type curve is that in the straits of Florida itself, resembling the projecting part, or tongue I have called it, of the type curve inshore from the Gulf Stream, and of the Gulf itself. This one might have been drawn from previous inductions, such as it is presented in the observations made in 1855, by Lieutenant Commanding Craven, between Cape Florida and Beminia.

These type curves are variously modified; and there are others which seem in certain parts of the Stream quite typical of their positions, but which are less general in their application than those forms. The changes are easily understood, and I have sufficiently dwelt upon this part of the subject.

I proceed next to consider what the cross-section of the Stream presents, taking up as a first point of reference the diagram of the Sandy-Hook section. The deep trough in which the warm water lies, with its large projecting lip towards the land, and a shorter one towards the ocean, are sufficiently marked. The curves show similar features after we leave those near the surface. The most remarkable of these is the sudden change of temperature, which in ten miles rises some fifteen degrees so suddenly that, as shown in the diagram, the angle of the "cold wall," as Lieut. Bache called it, is almost vertical. This same form presents itself to the greatest depth of the soundings, namely four hundred fathoms, though diminishing in sharpness, rising at a mean about twenty degrees in fifty miles, at least seven degrees in fifty miles, so perfectly distinct in all the curves that its determination upon any one would be pronounced satisfactory. When it is recollected that the observation at each depth is an independent one, having no connection between that above and that below it, the induction is complete. The overflow of the Gulf water is distinctly shown by the curves of five and ten fathoms, every

point being above the temperature of 65 deg. in this section at these depths. Passing from the Sandy-Hook section to that off Cape May and to that off Cape Henry, the same result shows itself. There is a cold wall, as it were, confining the water of the Gulf. The Polar current passes along the shore, modifying essentially the climate of the land and the character of the navigation of our coast. The warm water overlying this flows towards the coast, reaching it south of Cape Hatteras and sometimes north of it, superficial in depth, but sufficing to impart warmth to the shores which it reaches.

Does this cold wall extend to the southern sections of the Stream? and if so, how far? I have drawn the comparative diagram of curves of temperature in the interior parts of the southern sections, to prove that, though the difference of temperature is less striking than to the north, it exists. The northwardly current, which must bring this water, thus really flows along the coast, always at certain depths variable with the season and circumstances of wind and temperature, but always there. Sometimes the warm water near the surface bathes the very coast, as shown in the diagrams of the sections south of Hatteras.

The cold wall is with tolerable certainty traced by observations as far south as Canaveral. At times the southerly set of this inside current is decided, as was the case by Lieut. Maffitt's observations off Charleston in June, 1853. This set of the current further north has been long well established.

Returning to the diagram of the Sandy-Hook section, we see that the curves rise and fall in successive waves, dividing the area across which they pass into well-marked spaces; that, as a rule, the adjacent curves conform, passing into different shapes, which present contrasts if we regard those at many fathoms distance—as at one hundred and five hundred fathoms for instance, but which, as shown by the intermediate curves, pass gradually from one to the other. The law of division is best marked between twenty and two hundred fathoms.

Each position is independent of the former, as each obser-

vation in the position is independent; and thus the results obtained at one depth confirm those at another when they agree. The next diagram, that of Cape May, strengthens the former induction; then that of Cape Henry still further confirms it. We see, too, that the divisions into warm and cold bands, which are indicated on the Sandy-Hook section, are not arbitrary or accidental, but that the same bands recur more plainly on the Cape-May, and still more so on the Cape-Henry section. Their distances from the coast are such as to connect them in these sections. In each we see a rapid rise of temperature from the cold wall into the Gulf Stream proper, a slow descent to cooler water, a second rise to a point not so high, a second fall, and a third rise not so well marked. At the depth of thirty fathoms on the section, we have a rise from the cold wall to the axis of the Gulf of 26½°, a fall to the axis of the first cold band of 8½°, a rise to the axis of the warm band of 6°, a fall of 3° to the axis of the third. The distances on this section are: to the cold water, about 100 miles; the width of the first warm band is 50 miles; of the first cool band, 25 miles; of the second warm band, 60 miles; making the width of the Gulf Stream proper about 135 miles. The width of the second cold band is 65 miles; of the third warm band, 75 miles, but indefinite; giving for the whole width of the warm water, 275 miles in this section. I have thrown the others into the form of a small table, as follows:—

Distances of the "Cold Wall" from the Shore, and the Widths of the several Bands of Cold and Warm Water of the Gulf Stream, measured on the Lines of the Sections.

SECTION.	Distance of Cold Wall from shore.	First Maximum or Hot Band.	Second Minimum or Cool Band.	Second Maximum or Warm Band.	Width of the three Bands, or Gulf Stream.	Third Minimum.	Third Maximum.	Fourth Minimum.
Sandy Hook.....	235	60	40	50	150	75	Indef.	Indefinite.
Cape May.....	137	50	37	45	132	75	70	
Cape Henry.....	100	50	25	60	135	65	75	
Cape Hatteras.....	35	50	30	50	130	50	60	
Cape Fear.....	65	30	17	40	87	35	55	
Charleston	70	25	10	35	70	25	35	
St. Simon's.....	90	25	10	30	65	20	35	
St. Augustine	75	50	..	..	50	20	Indef.	
Cape Canaveral.....	35	40	..	..	40	10	..	
Cape Florida.....	10	25	..	..	25	5	..	

They present a width of Gulf Stream proper of from twenty-five miles at Cape Florida to one hundred and fifty miles at Sandy Hook, and of warm water at say fifteen fathoms, of from thirty to three hundred miles wide. These principal divisions of the Stream, as we pass southward increase in their definiteness, and are limited to smaller spaces. We see on the Charleston section, and on the Canaveral, the same features which were dimly shadowed forth in Sandy Hook, and must admire the sagacity which discerned in their germs these rich fruits. While we trace thus carefully step by step, we must consider how far these results can be relied upon as exact, or capable of reproduction: how far are those bands permanent or moderately variable, and how far altogether accidental, the result of errors of observing, of errors of place, of change in the Stream itself? We have two modes of trying this. First, each series of observations was connected to the

preceding one by running over the same section. We have thus the fact established that the same divisions of the Stream were obtained in successive years. I need not remark that not only had the observers no reference to the results of their predecessors, except in position, which they endeavored as far as convenient to make the same, but in general the examinations of the results were first made by myself from the rough notes of the hydrographic officers. The table in the diagram is as follows:

Table of the Distances from the Shore, in Miles, of the Minima and Maxima Points of Cape-Henry section for each of the three years' Observations, and for the groups into which the observations are divided.

	1st Minimum, uncorrected for recession.	1st Minimum, corrected for recession.	1st Maximum, uncorrected for recession.	1st Maximum, corrected for recession.	2d Minimum.	2d Maximum.	3d Minimum.	3d Maximum.	4th Minimum.
Mean of 0, 5, 10, 20, and 30 fathoms,	72	72	125	125	187	230	265	312	355
" 50, 70, 100, and 150 "	100	78	130	122	183	217	260	322	395
" 200, 300, and 400 "	100	76	138	115	185	205	255	325	370
500 "	100	74	148	117	193	218	260	322	355
Mean for 1846	93	75	135	120	187	218	260	320	369
Mean of 0, 5, 10, 20, and 30 fathoms,	70	70	130	130	190	210	295	340	370
" 50, 70, 100, and 150 "	97	75	137	129	187	225	287	335	395
" 200, 300, and 400 "	100	76	147	124	182	213	299	337	387
500 "	96	70	170	139	183	210	285	337	402
Mean for 1847	91	73	146	131	185	215	291	337	388
Mean of 5, 10, 20, and 30 fathoms,	65	65	127	127	180	202	290	333	365
" 50, 70, 100, and 150 "	75	53	137	129	183	200	287	335	375
" 200, 300, and 400 "	78	54	165	142	180	195	290	330	370
500 "	90	64	155	124	175	192	282	315	370
Mean for 1848	77	59	146	131	180	197	287	328	370

Recapitulation of the Means for each year.

	1st Minimum, corrected.	1st Maximum, corrected.	2d Minimum.	2d Maximum.	3d Minimum.	3d Maximum.	4th Minimum.
Mean for 1846.....	75	120	187	218	260	320	369
" 1847.....	73	131	185	215	291	337	388
" 1848.....	59	131	180	197	287	328	370
" three years.....	69	127	184	210	279	328	376
Prob. error of each division.	5.8	4.3	2.4	7.6	11.3	5.7	7.2

The mean probable error of the first four divisions being.....5.4 miles,
The mean probable error of the last three divisions being....8.4 miles.
And the mean probable error of all seven of the divisions being 6.8 miles.

The table shows that the same results are reproduced in different seasons with less variation than is found at different depths in the sections themselves.

On the Cape-Henry section, which was run over three times, the positions of the "cold wall," and three following divisions constituting the Gulf Stream proper, were reproduced with a mean probable error of 5.4 miles, and the succeeding three minima and maxima points with a mean probable error of 8.4 miles.

Now, as the positions at sea were liable to an uncertainty of some three to five miles, this result must be held as proving conclusively the general permanency of these divisions, and the possibility of determining them within very moderate limits from year to year. But it not only proves this, but the accuracy of the different observers. The Cape Henry section was run over by Lieuts. Geo. M. Bache, Richard Bache, and S. P. Lee; the Hatteras section by Lieuts. Richard Bache and J. N. Maffitt; the Charleston section by Lieuts. Maffitt and T. A. Craven.

But there is another test of the results. As each curve of temperature, at a given depth, is independent of any other, and as a general law is established by the comparison of the whole of the curves that the cold wall and axis of the hottest

water change their position, from the surface to the depth of six hundred fathoms, slowly and by an ascertained progression, and that the succeeding maximum and minimum points are at the same distances from the shore or in a vertical line from the surface at all the different depths,—the relative positions of these points (as shown by the observations at different depths) become thus the test of the permanency of their positions, and of the accuracy with which they have been ascertained. These show that the cold-wall and axis maximum could be ascertained at the Cape-Henry section to about one mile, and the other points to rather more than two miles. The test which they apply to the accuracy of the different observers, who used the same instruments, it would be invidious to employ where all the observations are so good. Tried in this way by observations below the disturbing influence of storms and ordinary meteorological changes of short duration, the permanence of these divisions, the fact that they can be ascertained with certainty from year to year, the same or similar results being reproduced, that the results can be had by different observers and with different instruments within moderate limits, are conclusively proved.

Table Showing the Probable Uncertainty in Determination of the Maximum and Minimum Points.

NAME OF SECTION.	UNCERTAINTY, IN MILES.						
	Cold Wall, 1st Minimum.	Axis, 1st Maximum.	2d Minimum.	2d Maximum.	3d Minimum.	3d Maximum.	4th Minimum.
Sandy Hook	..	.75	.00	3.94	7.99	..	..
Cape May	.82	1.25	2.54	1.57	..	4.03	4.87
Cape Henry (three years)	.84	.61	.55	1.70	1.06	.94	3.42
Cape Hatteras (two years)	..	6.77	6.36	9.31	5.69	6.23	..
Cape Fear	..	1.25	..	..	2.98	3.49	13.37
Charleston	1.25	1.57	.72	2.09	2.40	.82	..
St. Simon's	.00	.74	1.27	.41	..	..	..
St. Augustine	.52	.51	.44	.44	.55	..	..
Cape Canaveral	.95	1.69	.39	..	..	..	..
Final value	.83	2.49	2.49	4.00	4.01	3.71	8.45

It is quite instructive, that while the phenomena as related to the axis of the Gulf Stream vary so little, the temperature of the sections themselves changes so much from year to year. Thus the average temperature between the surface and four hundred fathoms, beyond or outside the cold wall on the Sandy Hook section in 1846, was as high as that on the Cape-Henry and Cape-Hatteras sections in 1848, and as on the Cape-Fear section in 1853, within a degree of the St. Augustine section in 1853, while the Cape-Hatteras section in 1848 and 1853 differed two degrees. Again, the temperature from the surface to thirty fathoms, just below the axis of hottest water, on the Sandy-Hook section in August, 1846, was either above or as high as that on the Canaveral section in June, 1853. In general, the Cape-May section of 1846 and the mean of the Cape-Henry section of 1846, 1847, and 1848, are warmer at the same depths than the sections south of them were in 1848 and 1853.

These results have only in part been carefully scrutinized. They serve to show that there are great changes in the mean temperature from year to year, and probably from season to season.

The connection of these with the weather changes of the Gulf will no doubt one day be made out. They will be studied with the changes of the season, of the great body of the Stream, and, by wind and storm, of the surface and near it.

The depth at which the phenomena may be ascertained with considerable certainty turns out to be about twenty or thirty fathoms; and this is a depth which can be reached without injury by a thermometer in a strong case, and by Six's self-registering thermometer. That the surface gives, in the midst of all its variations, at times, reasonably good results, our observations also clearly show, and invite rather than repel the comparison of the means of many observations.

These subdivisions of the Stream serve to show how navigators have differed so much in regard to its extent and tem-

perature, and how they have been baffled, in changing position, to find the temperature unconformable to their expectations. Cold water in the midst of the Gulf Stream has been set down more than once, even in the earlier voyages; but it has been supposed an accidental or special occurrence, and not belonging to a general system.

It may be observed in passing, that the different forms of this discussion have not given sensibly different results. I commenced it first by diagrams of the separate curves at different depths, next followed it up by averages in which the curves were grouped, then had the results independently worked over by Prof. Pendleton,—and all with essentially the same conclusions, differing merely, and moderately, in numerical details.

The physical causes of these divisions of the Gulf Stream does not appear at the depths which we have reached in the more northern sections; but in that of Charleston as developed by Lieuts. Maffitt and Craven, and in the more southern sections as developed by the latter-named officer, the same divisions appear, and the causes of them. Turning to the second class of sectional diagrams, in which the depths corresponding to the same temperature are shown, we take up the same series of facts in regard to the distribution of temperature which we examined before, the warm water passing to greater depths as we recede from the shore, rapidly thickening at the Gulf Stream proper, and slowly thinning off again. When we represent the bottom of these southern sections, we find that after sloping moderately from the shore it takes a sudden and quite steep pitch, continuing at a considerable depth in many cases below the limits of the deepest soundings on the section, then rises to a considerable elevation, to descend again, and to rise and descend a second time; that, in fact, we have two hills, one one hundred miles from the coast, with a steep slope towards the Gulf Stream, and on the other side with a slope of fifteen hundred feet in twelve miles; a second with a slope of five hundred feet in height

and a base of twelve miles towards the axis of the Stream, and three hundred feet with a base of fifteen miles on the other side,—the first a hill rising certainly more than two thousand feet above the general surface below the Gulf. On the next section to the south of this, the same ranges appear, rising severally five hundred and two hundred feet above the adjacent valleys, and so on. And when we come to trace them from section to section, we find that they represent ranges of hills having a general parallelism with the coast, the distances increasing from fifty-five and eighty miles off Cape Canaveral, in latitude 28 deg. 30 min. to one hundred and hundred and twenty-five miles off Charleston, in latitude 31 deg. 30 min.; that the axis of the Gulf Stream keeps in the middle, or thereabouts, of the deep trough; that the cold wall is nearly over the first steep slope from the shore, the first cold band nearly on the top of the first range of hills, the second warm band nearly over the second trough, and the second cold band nearly over the second range of hills. Turning again to the section, we see that the cold strata of the polar current must lie in the depths of the first trough, and must rise on the flanks and over the tops of the hills, conforming in a general way to the slopes of the hill sides and the valley depths; that this arrangement of the strata will give just such divisions as we have found in the Stream.

That the connection of the sections by ranges of hills conforms strictly to nature, there could be no doubt from the numerous sections. It was a most interesting result, however, obtained by Commander Sands, in coming north last summer from the Gulf of Mexico, to verify this by sounding constantly on the first range of hills, thus tracing them from off Cape Canaveral, in latitude 28 deg. 29 min. north to off Cape Lookout, where he was obliged to leave this interesting research to look after the security of his vessel. The problem is yet to be determined, by the researches now in progress, how far north this range extends; and the question is yet to be answered, whether their structure which determ-

ines the distribution of cold and warm water on these southern sections, still continues northward, and is still the determining cause of the distribution; whether the changes in temperature from section to section are due in any part to the elevations and depressions along the axis; whether the ripples observed in certain localities are connected with them. These, and a crowd of suppositions, which the learned Secretary of the Smithsonian Institution would class as "unverified speculations," crowd upon the mind, and if allowed to escape would only discourage some laborio us discoverer by the chilling remark, "I predicted that this would be so" years ago. These things must necessarily come out of a proper course of experiments; and it is not good to indulge in anticipating them further than is necessary for guidance in investigation.

The sudden falling off of the slope next the shore, is a common feature along our coast. It is seen in the sections upon the offshore chart, embracing what I have ventured to call the Bay of the Five States between Nantucket, or the southern extremity of Cape Cod, and Cape May, at the distance of 235 miles from the entrance of the bay of New York; and in the offshore soundings of the Gulf of Mexico; and in the intermediate sections which have been sounded between Cape Fear and Cape Florida. If the cold wall is connected with the sudden steep slope on the southern sections, why not on the northern, where we do not find such a connection? The answer is not difficult; but still it shows how cautious we should be in generalizing, since the very first attempt we make to transfer the generalization of the Charleston section to the Sandy-Hook, fails.

Some interesting observations of Commander Sands, show that comparatively cold water is to be found in the Gulf of Mexico in the bight between the delta of the Mississippi and some point on the peninsula of Florida, or of the Keys, a comparatively shoal plateau, or rather gently sloping surface, lining the shores of eastern Louisiana, Mississippi, Alabama, and Florida. That outside of this is warm water.

In April, 1854, the difference of temperature in 150 miles, nearly off the Balize, was ten degrees. The temperature of the outer water was 78 deg. or nearly that of the Gulf Stream at this season of the year.

We are now prepared to collect and group on a chart, chiefly thermal, the facts relating to the Gulf Stream. I shall introduce what is known in a general way of its current incidentally.

Passing by the Florida Keys, the Stream was found last summer to have a temperature of 84 deg. This is 8 deg. above the mean temperature of the month of June at Key West, as given in the Surgeon General's reports.

The current here has little strength—enough, however, to make vessels seek its aid in working to leeward from Key West, and enough there to cause the steamers to seek it in their course by standing out towards the middle of the passage between the Florida Keys and Cuba.

Issuing through the Straits of Florida, and passing between the eastern coast of the peninsula and the Bahamas, it is turned northward by the land which confines and directs it. The direction of the Stream here is nearly north by a little west of north. Its velocity varies from three to five nautical miles per hour; and its summer temperature (July and August) at fifteen fathoms below the surface is about 78 deg., varying with the season. This is an interesting section. It shows, instead of an unfathomable gulf, worn by the rushing waters of this great Stream, quite a moderately deep passage, with two streams in it,—one passing rapidly to the north, and the other slowly to the south; one unmistakably tropical, the other as unmistakably Polar in its origin; the lower saving the bottom of the sea from the great attrition assumed for it by theorists.

Follow now the course of the Stream as it bends into the bight between Cape Florida and Cape Hatteras. Recollect that each one of these curves is the result of many data, all independent; that the cold wall, the axis, the second mini-

mum, and second warm streams, are four independent sets of observations; that the positions in each section, and in the several sections, are results of independent observations; that the results confirm each other remarkably, not only in passing from the surface to the greatest depths, but from position to position, and from section to section. The Stream off Cape Canaveral has a northwardly set, and between that Cape and St. Augustine, begins to bend to the eastward of north. The Stream between St. Augustine and Hatteras takes the general direction of the coast, making 5 deg. of easting in 5 of northing, curves to the northward and then runs eastward so as to make about 3 deg. of easting in 3 deg. of northing. In the latitude of 38 deg. between Cape Charles and Cape Henlopen, it turns quite eastwardly, having then a velocity of only between one and two miles an hour.

That this general sweep follows the coast under water (the coast line), the curve of one hundred fathoms, and the hill ranges of Maffitt, Craven, and Sands, seem in a general way fully to establish. That it may be modified by other circumstances is not denied, but merely that it is not determined by them.

The after progress of this mighty Stream and of its branches remain yet to be traced as this part has been, and the variations from the general conditions presented by change of seasons, winds and storms.

These we may hope, unless the success which has hitherto attended these labors be for the future denied them, accurately to determine, and perhaps at some future day to present to your attention.

ARTICLE II.

Topography and History of the State of New York.

By Hon. Horatio Seymour.

To understand the history of New York, it must be considered in connection with the geographical and topographical aspects of the State. The conditions of every people are affected by the position and character of the country they occupy. Like Antæus, they must trust to the earth for the support of their strength or the renewal of their vigor, when exhausted by the struggles of war, or the fluctuations of commerce. The physical peculiarities of this State have an unusual influence over its fortunes. They are enduring causes of its greatness and power. They have in the past, and they will in the future, affect the course of events in our country.

The history of New York has been unjustly neglected. We have overlooked the evidences of virtue, wisdom, and patriotism which its annals afford. The people of this State have not been inspired with the veneration due to its founders. An indifference to national history, has ever been deemed an indication of national decay, for it implies an insensibility to honorable events and patriotic actions. The Bible counts it among the virtues of a people, to remember with reverence the counsels and deeds of their fathers. It makes such piety one of the guarantees of continued prosperity.

Local histories, although of less dignity and importance, are of great value. They preserve the memory of humble events, which throw light upon manners and customs and the condition of society. They also invest familiar scenes about us with continued interest. If it is wise to gain wealth with

care and toil, that we may adorn our houses with paintings or statuary, and draw around us objects which gratify our tastes, surely it is most unwise not to store our minds with the knowledge which renders the hills and plains and rocks and floods around us objects of animating associations and memories.

My subject partakes of the character of both general and local history. It concerns events of humble origin which have grown into mighty existing influences; as well as marked occurrences, which at all times have excited general interest.

In my efforts to present a sketch of New York within the narrow limits of a lecture, I am embarrassed with the multitude of facts and considerations associated with its first settlements, its wars, its legislative and constitutional progress, and its advancement in commerce and the arts of life. Much has been written about New York. Valuable contributions have been made to our stores of knowledge with regard to it; but the history is yet to be written which, from the collected mass of materials, shall extract the philosophy of its events and present a just conception of our State.

I shall only attempt to rough-sketch its physical outlines, and consider them in connection with the prominent points of its history.

The Hudson River, Lake George, and Lake Champlain, lie in a narrow and rugged valley reaching from the bay of New York to the St. Lawrence. This is intersected at right angles about midway, by the valley of the Mohawk. These deep channels constitute the great base lines of our State. Its triangular form corresponds with their courses. They demand a particular description, for they are intimately connected with the history of New York. They have been the war paths of savage bands and of disciplined armies. They are the scenes of the most interesting and important occurrences in the history of the State and nation. They create our commanding and peculiar relationship with other sections of our country.

The harbor of New York, with its accessory bays, its connection with Long-Island Sound, its confluent rivers, and its different passages to the Atlantic, excites the admiration of all who study its wonderful adjustments. From this bay you float up the Hudson, past the cliffs of the Palisades, to the rocky fastnesses of the Highlands. Here, every analogy of nature leads you to look for rocky barriers; but you are borne by the Atlantic tide a hundred miles beyond the mountain chain which elsewhere divides the valley of the Mississippi from the Atlantic coast. Nothing can be more impressive than the Ocean's deep and sullen ebb and flow far down among the great foundations of those stern gray heights. They stand as if arrested here when pressing upon the river current, while north and south they stretch far away in unbroken chains to the St. Lawrence or the Gulf of Mexico. Elsewhere, rivers dash down the steep sides of the Alleghanies; but where these crowd upon the Hudson, they are cleft sheer down to their very roots. An enduring gateway is made through stern portals for ships of war, for vessels deeply laden with commerce, and for iron tracks upon which swift engines drag long trains of cars at the foot of rude cliffs, or through tunnels which pierce their granite buttresses. Ranged for many miles along both banks of the Hudson, had the Alleghanies thrown a single spur across its stream, how would it have changed the course of events in our land! Impressed with this unbroken ocean-current through the Highlands, the observant Indian called it "the river of the mountains." Continuing up its valley, we find lying in its northern depression, separated from the waters of the Hudson by a short portage, the wild and picturesque Lake George and Lake Champlain. From the Bay of New York to the waters of the St. Lawrence, this great valley divides the eastern part of our State and all of New England from the rest of our confederacy. In its whole length, its wild scenery accords with its striking legends. Its lower section, along the Hudson, was the strong hold of our country in the Revolutionary struggle.

It was the fortress of our liberties. Its rocky points, its mountain heights, its deep ravines, are associated with the history of the war for Independence. There is hardly a spot which does not bear the marks of invading assaults or of the intrenched defenses of our armies. The waters in the upper valley, which flow to the north, are still more deeply tinged with blood, and have wilder and older traditions of savage contests and of disciplined war. No other part of our continent has witnessed so much of relentless war, of bloody massacres, and of fierce battles, as have startled the echoes of its beautiful lakes, and disturbed their wonted quiet and repose.

The Mohawk, which intersects this valley, is intimately associated with it in historical interest and geographical importance. I speak of this valley, with its extensions to Oswego and Western New York. In passing up its banks from its confluence with the Hudson, we find that it also breaks through one of the ranges of the Alleghanies. In the county of Oneida, it flows through level lands, which, expanding as they stretch away to the west, are at length merged in the great plain of the Mississippi valley. At Rome, the waters of the Mohawk, when swollen by floods, mingle with those which flow into Lake Ontario. These physical peculiarities of the valleys of the Hudson and Mohawk produce remarkable results. Not only are the waters of the harbor of New York and the St. Lawrence connected by the valley I have described, but, turning up the Mohawk, the light canoe of the savage hunter could float into the tributaries of Lake Ontario, and, making a portage around the Falls of Niagara, continue on its way through Green Bay, the Fox and Wisconsin rivers, into the Mississippi, and thence up the Missouri into the very gorges of the Rocky Mountains,—a distance, by the course of the streams, of more than four thousand miles. The entire length of the same route can now be traversed by a vessel of burthen by the aid of artificial channels. But a single mile separates the head waters of the Missouri from those of the Columbia river. From the mouth of that stream

on the Pacific to the bay of New York, with the exception of this one mile, there is an unbroken silver chain of water. The hand of the Almighty foretold the destruction of one power in letters of fire upon the walls of its palaces. Has it not written across this broad continent, in a long line of rivers, lakes, and floods, that we, who are bound together by this wonderful channel of commerce, should remain one people living under one government? The courses of the Hudson and Mohawk, deeply grooved into the surface of our State, thus give us the control of the commerce between the twenty thousand miles of navigation on the lakes and rivers of the West, and the Atlantic Ocean and the maritime world at the East.

But to show more clearly its commanding position, I must call your attention to another remarkable fact in the geography of New York. The hills on either side of the Mohawk gradually rise up to elevations which pour from their outward, or northern and southern slopes, the sources of great rivers which traverse other States. The waters which drain from our territories, flow by the principal commercial cities of the Union. From northern New York, they run into Lake Ontario and the St. Lawrence, passing by Montreal and Quebec; by the Hudson, which is exclusively a river of our State, into the harbor of New York; from its southeast section into the Delaware, past Philadelphia into the Delaware bay; by the Susquehanna past Baltimore into the Chesapeake; by the sources of the Alleghany into the Ohio, past Cincinnati and New Orleans into the Gulf of Mexico.* Thus our State enjoys the apparently inconsistent advantages of having the deepest channels for commerce with the West, and at the same time of being at the head of the great valleys of the United States. This is not a fact of mere geographical interest. It

* A single railroad (the New York and Erie) touches at Dunkirk, the waters which discharge into the Gulf of St. Lawrence, and crosses in its course all of the divergent streams I have mentioned.

gives us substantial advantages. It enables us to penetrate with our canals and railroads into all parts of the country, by following the easy and natural routes of rivers. We can go into twenty States and into two-thirds of the Territories of the Union, without leaving the courses of valleys. No other Atlantic State can make a communication between its eastern and western borders without overcoming one or more mountain ridges. Thus, then, are we situated. One angle of New York rests upon the Atlantic, another reaches north to the St. Lawrence, while the third stretches west to the great lakes and the valleys and streams connected with the Mississippi. We are placed at the heads of the great valleys, while the Mohawk and the Hudson unite them all and give us command of the commerce of our country.

I have particularly described the valleys of the upper and lower Hudson and of the Mohawk, and of the great rivers which flow from our territories, on account of their commercial importance, their historical interest, and their physical peculiarities, and also because they will continue to influence the fortunes of our country. They will ever be the pathways for great events.

When our continent was discovered, the plains of the Mohawk and of western New York, were held by a confederacy of Indians who had subdued the country from north of the great lakes to Georgia, and from the Atlantic to the Mississippi. While their conquests were due in some degree to their bravery in war, yet they owed much to the geographical pecularities I have described, which gave them easy communications between themselves and avenues which led into the countries of their enemies. Mountain ranges divided their foes into different communities, while they were able to pour their united forces through the valleys I have mentioned. They held in subjection numbers far greater than their own, because they could attack and subdue isolated tribes. Their war-paths led along the Hudson, the Delaware, the Susquehanna, and the Alleghany, and the margins of the great Lakes.

Nature marked out for them the same strategy which Napoleon used with such wonderful success, that of maintaining a compact force, of dividing his enemies and bringing the greater power to bear upon the point of attack. That the Iroquois understood the value of union, is shown by their confederacy; that they appreciated the importance of their geographical position is proved by the figure of speech by which it was designated. It was called the "long house" or castle, and the different tribes were made guardians of its outlets and defenses. The Senecas in western New York were the keepers of the great western gate which led into the valley of the Mississippi; and the Mohawks, the fiercest and most powerful clan, the keepers of the eastern door or gate from which they issued to conquer the Algonquins in Canada, or the Mohicans and other tribes of New England.

After the discovery of this continent and its settlement by Europeans, the wars and national animosities of France and England were transferred to America. In this remote part of the earth, far away from the observation of the world, in the deep recesses of the forests, a bloody and protracted warfare was waged. In its struggles, some of the most heroic spirits of the day were engaged. We find that armies followed the track of the war-path, and the Mohawk and upper Hudson were the scenes of their conflicts. The ferocity of this contest, and the numbers engaged, in a region so sequestered and wild, were remarkable. Both nations, looking upon these valleys as the keys to the whole country, strove for their possession. Every effort of diplomacy was made to gain the alliance of the Five Nations, and for a long time with varied success. The French established a colony at Onondaga. In 1690, a party of French and Indians burned Schenectady. In 1755, a bloody battle was fought at Lake George, between the French under Baron Dieskau, and the Indians and Colonists, under Sir William Johnson. In 1756, Montcalm with nine thousand men captured Fort William Henry on the same lake, and his savage allies massacred fifteen hundred of its

garrison. General Abercrombie, with an army of sixteen thousand men, passed through Lake George with a fleet of more than one thousand boats, and made a desperate but unsuccessful attack on the French at Ticonderoga. His loss was more than two thousand killed, among whom was Lord Howe, one of the most chivalrous and heroic men of the British army. As a part of the same campaign, Fort Stanwix was built at Rome, and an expedition was planned against Canada by way of Oswego. In 1757, Lord Chatham, determined to expel the French from this continent, placed Lord Amherst at the head of an army of fifty thousand men, a greater force than was employed against us at any time during the Revolutionary war. One division under Prideaux, was sent up the valley of the Mohawk to western New York, another under Wolfe up the St. Lawrence, while the main body under Amherst, moved through the valley of the upper Hudson, through Lake George and Lake Champlain, to Canada, where the concentration of forces was to complete the conquest of that province. This campaign ended in the capture of Quebec, the dramatic deaths of the rival heroes Wolfe and Montcalm, and the extinction of the French power on this portion of the continent. The expenses of that war constitute a large item in the present national debt of Great Britain. More than ten millions of dollars were spent in fortifying Crown Point, although that fortress was never completed.

When the Revolutionary contest began, these valleys, which had been the scenes of Indian warfare, and the equally savage contest between the British and the French, immediately became the theater of a continued and bloody struggle. The whole region of the Mohawk was plunged into a civil war of the most ruthless character. The first capture of British arms and prisoners was made by Ethan Allen at Ticonderoga, and the first naval battle of the Revolution fought by Arnold on Lake Champlain. Knowing that the control of the Hudson would divide and destroy the power of the patriots, our enemies attempted to secure its possession.

General Burgoyne, with his disciplined army, came down the valley of the upper Hudson. Lord Howe and Sir Henry Clinton, with a fleet, were to sail up that river, while St. Leger, with Indian forces, entered the valley of the Mohawk at Rome. Through these accustomed pathways of war, our State was assailed at once by the naval power, the disciplined armies, and the savage allies, of the British empire. The defeat of the latter at Rome, and the surrender of Burgoyne, baffled this great combined movement, the most formidable made against our liberties. The battle of Saratoga achieved the freedom of our country. It gained us the alliance of France, and substantially terminated the contest. In our last war with Great Britain, she acted upon the same idea of getting possession of these great avenues of this State, and thus dividing the power of our country. It was hoped, if thus separated from the rest of the Union, the inhabitants of New England would not be unwilling to renew their allegiance to the British crown. Her army, aided by her fleet, entered northern New York by Lake Champlain. Attacks were made upon Sacketts Harbor, designed to reach the valley of the Mohawk. The victories of Macomb and McDonough defeated the hopes of our enemies at home and abroad, and terminated this last effort to concentrate hostile armies at the capital of our State.

Since the invasion of the French from Canada, in 1665, under De Courcelles, that part of New York lying along Lake Champlain and the upper Hudson has been the field of strife and blood in fifteen campaigns. [See Elements of Military Art and Science, by H. Wager Halleck.] An equal if not greater number of military expeditions or savage forays have been directed against its Western and Ontario borders, the valley of the Mohawk, and the head-waters of the Susquehanna. The lower Hudson was the perpetual seat of war during the Revolution. There is no part of our State which has not suffered from the contests of disciplined armies, or from the horrors of the torch and the scalping-knife, in the

hands of infuriated savages. New York has been the battle-field of our country.

I have not stopped, in this hasty recital, to call your attention to any of those circumstances which in such prolonged and varied contests have filled every part of New York with histories of battles and traditions of personal bravery and suffering. Hereafter, they will afford fruitful themes for the historian, the novelist, and the poet. My purpose is to illustrate the remarkable position held by our State.

These occurrences have thus followed in the same channels, not for casual but for enduring causes. The influences of these valleys have not been confined to guiding the tracks of war. Where war-paths led through deep forests; where the standards of France were borne by chivalrous warriors; where armies marched in their assaults upon our liberties; where, at a later day, our own citizens went forth to meet the enemies of our country,—you will now find the great avenues of commerce. They are crowded with vessels laden with the fruits of our soil, supplying the wants not only of our own but foreign lands. France and England are now looking to this country, which they have enriched with their blood, for the bread to feed their armies in the remote Crimea. Through these valleys greater armies than Europe can send forth to battle, are borne, not to violent deaths or lingering disease, but to homes on the fertile plains of the West. Once they were the paths of war; to-day they are trod by the armies of peace. Look at the products carried through these channels of commerce; trace back their transportation through great lakes, up winding rivers, or across vast plains, to the fields upon which they were tilled; think of the toil bestowed upon them, the thousand hopes and fears, of pleasures and of sorrows, with which they are associated, and which yet cling to them in their course through our State,—and you will feel that the drama of life as here presented in emigration or commerce, is not of less dignity than the pomp and circumstance of war.

The physical peculiarities of our State have had much to do with the first settlement of New York; with the character of its people; with the foundations of its society; with the development of statutory and constitutional law, and its influence over the policy of our whole country. Our commercial advantages brought us a cosmopolitan population from the outset. Commerce, the great agent of civilization, gave us, from the first, the best principles of government and of social and religious liberty then known to the world. The report by Hendrick Hudson of the character of the bay and river he had discovered, led to its immediate settlement by the most heroic, intelligent, and enterprising people of the age. The principles of the Dutch made Holland the asylum of those who fled from religious or political persecution. Their liberal views were imparted to the colonies they founded. By drawing to their settlements here all nationalities and creeds, they made that toleration a law of necessity which at first was a measure of wise and humane policy. The world has never witnessed a scene of greater moral beauty than the Bay of New York presented under the Dutch government, and at a later day, while its just views of liberty continued to influence the community it had founded. At a period when rights of conscience were not recognized in Europe, save in the limited territories of Holland, there were clustering around the beautiful harbor of New Amsterdam communities representing different nationalities and creeds, living in peaceful intercourse. The Hollanders and Swedes at Manhattan, the Waldenses upon Staten Island, the Walloons and English upon Long Island, and the Huguenots upon the banks of the Hudson, found here a refuge from religious persecution. What civilized Europe denied them, they sought on this spot, still shaded by primeval forests, and still made picturesque by the gliding canoe of the savage. These exiles from Piedmont, from France, from the banks of the Rhine, and from Britain, lived here in peaceful concord as strongly in contrast with the bigotry and intolerance which prevailed elsewhere, as was

their civilization and refinement to the wild scenes and savage tribes who surrounded them. At a later day, the persecuted Germans from the Palatinate were settled on the Mohawk. A colony of Scotch Highlanders, banished for their attachment to the Catholic religion and to the romantic fortunes of Charles Edward, found a home, not unlike their native hills and lakes, in the northern part of Montgomery county. The Protestant Irish established themselves in Otsego county; and there were settlements of French in northern and western New York. A small colony of Spaniards once existed near Onondaga Lake, but were destroyed by the Indians. The Welsh came to this country soon after the Revolution. Almost every European tongue has ever been spoken at the firesides of our State, and used on each returning Sabbath in offerings of prayer and praise to the God of all languages and all climes.

Nine names, prominent in the early history of New York and of the Union, represent the same number of nationalities. Schuyler was of Holland; Herkimer, of German; Jay, of French; Livingston, of Scotch; Clinton, of Irish; Morris, of Welsh; and Hoffman, of Swedish descent. Hamilton was born in one of the English West-India Islands, and Baron Steuben, who became a citizen of New York after the close of the Revolutionary war, and who was buried in Oneida county, was a Prussian.

As this was originally a Dutch colony, the character of that people, and their influence upon our institutions, demand particular notice. These colonists came here in the heroic age of Holland. She had then asserted and maintained her national independence in an unequal contest of eighty years' duration against the colossal power of Spain; which, under Charles V. and his immediate successors, overshadowed and threatened the liberties of all Europe. This war with Spain excited the admiration of the world. It should also excite its gratitude. It was a contest for civil and religious liberty in behalf of mankind. After the close of this struggle, Hol-

land battled single-handed against the combined powers of France and England. It was the age in which she produced Maurice, the greatest warrior of his times; De Ruyter and Tromp, the ablest naval commanders; Grotius, whe is yet authority on international law; and Barneveldt and the De Witts, the purest and most skillful statesmen. Twice, in a century, her people let the sea cover their land rather than it should be occupied by tyrannical oppressors. Such was their love for knowledge, that when the republic wished to reward the citizens of Leyden for their heroic defense of their town, they chose an institution of learning rather than commercial advantages, to perpetuate the remembrance of their patriotism. We should be proud that we derive so many of our political principles from this people. Nor is the debt of gratitude a local one. Holland was the asylum for the persecuted Puritans. It taught them the advantages of a republican form of government. Our obligations are broader than this: they are national. Constitutional liberty was introduced into Great Britain by the revolution which placed upon the British throne the Prince of Orange, who had recently commanded the armies of Holland against those of England. The accession of the Dutch monarch essentially modified the character of the British government, and invigorated sentiments of freedom in all of her colonies.

The influences exerted by the first American colonists upon the history and character of our people, involve inquiries of great interest, which throw light upon the principles of our institutions, and upon questions which even at this time agitate the public mind. Their discussion at times has excited feeling, where there should be none. As a descendant of the Pilgrims, and a native of New York, I can speak upon this subject without partialities. We can clearly trace the influence of the Hollander and the Puritan upon the course of public affairs in our country. I select these two emigrations, for they represent conflicting views of constitutional and legislative policies. The Puritan colonists have been the objects of

indiscriminate ridicule, and of equally indiscriminate praise; yet their characters and views are clearly defined in their own transactions and histories. They had been engaged in long and bitter controversies. Those who came after the execution of Charles I., had been involved in a civil war envenomed by religious prejudices. It was a contest in which there were no compromisers. In their successes, they had conceded no toleration; in their defeats, they received none. They fought to establish a religious power not only for their own advantage, but for the control of others. Defeated in this struggle, they withdrew to the wilderness on this side of the Atlantic, sternly brooding over their defeats. They were made gloomy by the belief that they were contending not only against men, but against spiritual foes in bodily forms; and they fenced themselves round with a charmed circle of austerities. They wished to be let alone in their remote retreats, and they resisted what they deemed the intrusions of heresy. They made no pretenses to the views of religious toleration now claimed for them. Their government was partially a theocracy. They believed the Quakers were heretics, and they were banished; they believed that some were in intercourse with the evil spirits, and they were burned;* they could not understand the principles of religious freedom advocated by Roger Williams, and they drove him out of the land. They persecuted others as they had been persecuted. They were made harsh by suffering and sacrifices. But this is the dark side of their character. They were vigorous and self-reliant. A common poverty destroyed distinctions of rank. None were rich

* "The mischief wrought by this delusion was wide-spread and terrible. Society was paralyzed with alarm. Evil spirits were thought to overshadow the land. When the royal veto arrived, twenty persons had been executed, fifty-five had been tortured or terrified into a confession of witchcraft, one hundred and fifty were in prison, and two hundred more had been accused."—*Page* 447, 1*st vol. of Lossing's Field-Book of the Revolution.* At this time, the population of the colony was small. The Statutes of Massachusetts against witchcraft, and its sumptuary and pragmatic laws, are in striking contrast with the enlightened legislation of New Netherlands.

enough to establish the manorial estates or privileges which were created in New York. They were industrious and enterprising. Their religious doctrines led them to value education as a means of spiritual and intellectual improvement. As they spoke a common language, education was rapidly spread throughout the community. Under these influences the individuals became superior to the spirit of their laws. None do so much injury to their characters as those who, with bad taste, try to soften their stern aspects with inconsistent adornments and graces, or, with still worse logic, insist that they had principles of toleration with practices of persecution. Let them alone, in their clear and decided characters, as men of robust virtues and grave faults. Let the circumstances of their history excuse their wrong doings. From them we get many virtues and advantages; we get elsewhere our best conceptions of civil and religious liberty.

The colony of New York, in its leading features, was the reverse of that of Massachusetts. I have alluded to the character of the Dutch people of the 17th century. The Hollanders not only tolerated, but invited different nationalities and creeds to their new settlement. More enlightened than their age, they had made great advances in civil and religious liberty. They rejoiced in the cosmopolitan character of their inhabitants. The rebuke given by the directors to one of their governors, who was inclined to persecute the Quakers, is a clear and beautiful illustration of their sentiments:— "Let every one remain free as long as he is modest, moderate, his political conduct irreproachable, and as long as he does not offend others or oppose the government. This maxim of moderation has always been the guide of our magistrates in this city (Amsterdam), and the consequence has been that people have flocked from every land to this asylum. Tread, then, in their steps, and we doubt not you will be blest."

It needs no argument to show where religious freedom was most respected. The Walloons, the Waldenses, the Hu-

guenots, and many from the eastern colonies,* flying from persecution and clustering around the harbor of New-York, mark the spot where liberty and toleration were presented in their most attractive aspects. It requires no discussion to prove whence we get our best ideas of constitutional and commercial law and municipal freedom. Not from England, depressed by the tyranny of the Plantagenets, the Tudors, and the Stuarts, for long centuries down to the period of the settlement of this country; but from republican Holland, the "Venice of the North," the "Queen of the Seas," who, while struggling against the power of Spain, "grasped the commerce of the world, and made it to supply the means to wage her unequal war with tyranny and wrong." On the other hand, the vigor of character, the appreciation of education and religion, derived from the Puritans, are manifested in every quarter of our land; in public and private enterprises. Our people required and possess the characteristics derived from both of these sources. He who would seek to deprive the Hollanders or the Puritans of their just share of veneration, is unworthy to be the descendant of either.

The Dutch had, then, a republican government. Our great political maxims were recognized there. "Unity makes might," was a motto; and "taxation only by consent," a principle. They originated the vital principles of our institutions, —municipal and township organizations, and the great con-

* The historian De Laet says that numbers, nay, whole towns, to escape from the insupportable government of some of the New-England colonies, removed to New Netherlands to enjoy that liberty denied them by their own countrymen. Throg's Neck, in Westchester county was settled by Throgmorton, and thirty-five families which were driven from Massachusetts with Roger Williams. Gravesend, on Long Island, was founded by Lady Moody and her followers, who for the same reason sought shelter under the liberal government of New Netherlands. So many of this class came here, that, to prevent the disturbing of harmony and social intercourse by the incoming of so many strangers to reside here, an English secretary to the Council was appointed. As the early immigrants from New England were induced to come here by the superiority of our laws, they were active supporters of intelligent and liberal legislation.

ception of local self-government. While the views and practices of government of the first settlers of this State were so superior to those of the New England colonies, there were causes which made the former less intelligent as a people. Their clergy and teachers were learned men, and academies were established at an early day; but this learning was lost when the English language was generally used. The diversities of nationalities and tongues in this colony were unfavorable to the dissemination of learning, as each people required distinct teachers and systems of education. The most unfavorable influence was the creation of large estates by grants from the government, which were commenced by the Dutch and continued by the English authorities. This practice created a class of tenants, or compelled the colonists to buy their lands of the large owners. It also made great social distinctions, and was injurious to the people. Although their principles of government were superior to those of New England, the mass of the people was thus made less active and enterprising. It is remarkable how enduring the influences of these facts have been. The population of New York and New England are about equal. If you go to the Western States, you will find a large share of its enterprises in the hands of emigrants from New England, while the political institutions are molded after New York,—you will find the enterprise and mechanical skill with the former, while the judiciary of this State is everywhere recognized as controlling in legal questions. Our judges settle principles of jurisprudence for two thirds of the Union.

The influence New York has exercised over the constitutional history of our country, is owing to the superiority of its political principles during the colonial and revolutionary eras. The United States of the Netherlands presented all the leading features of the United States of America, although their adjustments were less perfect. It was a republic made up of several distinct communities, united for common defense, but retaining rights of separate self-government; its

government was representative. Its great leading feature was its municipal corporations and subdivisions in the nature of townships, with rights of local legislation. Acting upon this principle in our own State, the several towns manage their own affairs; our boards of Supervisors transact the business of the counties; the legislatures make laws concerning the sovereign States; while the general government is invested with powers and restrained by limitations which only give it jurisdiction in matters of national defense, dignity, or importance. It is this system which secures the good government of every part of our country. It has been the growing appreciation of its value which has constantly carried jurisdiction from general to local tribunals. The higher governments have been made less powerful and less liable to become injurious from corruption or ambition, by giving legislative rights to the more humble, economical, and safer control of town and county officers. The germ of this principle existed in the government of the United Provinces; its full exposition has only been seen in this country, and its value and importance shown on the broad theater of our land; where it has preserved the integrity of our Union, and disappointed the hopes or predictions of those who foretold its early dissolution as a necessary consequence of its expansion. The Dutch principle of "No taxation without consent," lay at the foundation of our Revolution; and their motto that "Unity makes might," taught us how to uphold that principle; and its municipal corporations and its local legislatures were the types of our political institutions.

Not only were the colonists of New York imbued with sentiments of freedom, but they had the earliest and most urgent occasions to assert them. Living without the protection of a charter, for a long time under the control of the private ownership of the Dutch West India Company, and of the Duke of York, amid the unfavorable influences of great seigniories, as early as 1690 they boldly claimed their legislative rights, and resisted "Taxation without consent." The

contests with the royal governor were conducted on the part of the colonists with signal ability; and their protests and arguments were pronounced by Attorney-General Randolph, of Virginia, to be the ablest expositions of the rights of popular representatives. These controversies involved a wide range of discussion, and thoroughly instructed the people of the colony in the principles of constitutional liberty. The contest which commenced in New York, between its legislatures and the royal governors, extended to other colonies, and excited the public mind from time to time until the era of the Revolution. The whole of the American people were then united against the aggressions of the Crown. The resolutions of the New York Assembly against the Stamp Act were drawn up with consummate ability, and, to use the language of Pitkin, "breathed a spirit more bold and decided than those from any other colony." In 1754, a convention of delegates from the several colonies, held in the capital of our State, which was attended by Benjamin Franklin and other eminent men, drew up a plan for colonial union for protection against the French and Indians. This proposition prepared the minds of the American people for a similar measure to resist British tyranny, and most appropriately the motto of Holland that "Unity makes might," was first acted upon in the city she had founded. In 1775, a provincial congress assembled in the city of New York, and was the first of those illustrious councils which, in the language of Lord Chatham, "with solidity of reasoning, force of sagacity, and wisdom of conclusion, ascertained, vindicated, and established the liberties of America."

I shall not dwell upon the Revolutionary contest. In its progress, it carried war and desolation into different sections of our country. Elsewhere, it swept like the tornado in its course, but its visitations, while destructive, were temporary. In this State, its thunderings never ceased, its baleful fires were never quenched, during the whole struggle. On the Mohawk, it was attended with all the horrors of civil war,

made more revolting and terrible by savage barbarities. The whole length of this gentle valley was desolated by the sword and bayonet, the torch and tomahawk.

When it was determined to sever our connection with Great Britain, Congress recommended the formation of governments in all the colonies, equal to the demands of their new independence. All of the States save two followed the recommendation. The constitution formed in New York, amid the confusion of the Revolution, is a proof of the profound knowledge of its leading men in the principles of civil liberty, good government, and constitutional law. Its superiority was universally admitted, and it was received with great favor, not only in the State, but elsewhere. "Our constitution," says Jay, in a letter to the President of the Convention, "is universally approved, even in New England, where few New-York productions have credit." [See Hon. B. F. Butler's Address before the New York Historical Society.]

All of the State constitutions recognized in express terms the natural and absolute right of every man to worship God according to the dictates of his own conscience; yet the constitutions of New York and Virginia alone were free from provisions repugnant to these declarations.

Great injustice has been done to the early instrumentality of New York in the cause of American independence. The peculiar situation of the province—without a charter, the arbitrary conduct of many of the royal governors, the questions growing out of their acts and pretensions,—compelled the people of this State to place themselves, from the beginning, on the high grounds of natural and inherent rights. Elsewhere these contests frequently grew out of questions about the construction of charters.

Still greater injustice has been done to the services of the early statesmen of New York in the formation of our national Constitution, and in the tone of construction given to that instrument when our government was first organized. I have shown why they were well trained in the great princi-

ples of government,—that they drew their sentiments from the best sources, the only free and republican government then existing. When the Independence of the colonies was achieved by the common patriotism of our countrymen, a greater task remained to be done. The Confederation was temporary in its character, and insufficient for a bond of union when the outward pressure of war was withdrawn. We occupied a vast country, which presented a great variety of climate and condition. There was no power to coerce these conflicting interests. To reconcile them appeared impossible. To dissolve again into the original separate communities, involved wars, standing armies, and the weakness which would make us a prey to European nations. It was then almost universally assumed that the strength of a government depended upon the amount of its privileges and the extent of its jurisdiction. The European statesmen declared we could not create a government with power enough to make it stable, which would not in its action, trample on some of the varied interests of our land. Out of Holland, there were no clear conceptions of a government which was not the source of power, instead of being its recipient from the mass of the people. The United Provinces of the Netherlands were so limited in extent and so homogenous in character, that they afforded no clear rule for our action. Under these circumstances, the duty of forming a government was entered upon by the patriots of our country. In the convention which framed it, two great antagonistic ideas were at once developed, and they have, under different phases, divided the public mind from that day to this. On the one hand it was held, that to make a government strong and enduring, it should have a large amount of jurisdiction; that its strength and endurance would be determined by the extent of its power. The opposing party held, that the strength and permanency of government grew out of limitations of authority, restraining it from acting upon questions which would bring it into conflict with the views of different sections of our broad land. They also held that the most beneficent legislation would be

secured by such distribution of political power, that different localities should direct those affairs which most concerned their own interests and happiness. These considerations were connected with the principle of representation. If it was to be a government of great jurisdiction, it was a matter of deep concern to know who would direct it. It was urged by some that representation should be graduated by population. This would give control to a few large States. It was contended by others that the several States were sovereignties standing upon equal grounds, and therefore entitled to equal voices in the common government. That this was the only security against the centralization of political power. The three great States of Virginia, Pennsylvania, and Massachusetts, insisted upon representations in the Senate and House of Representatives in proportion to population. New York, alone of the large States, declared that she did not ask nor would she take a representation in either branch of the national legislature beyond what was allowed to the feeblest member in the Confederacy. To my mind, this forms the noblest passage in the history of our State. Her future greatness was then apparent, yet she had the magnanimity to rise above the temptations of power, and the superior wisdom to see the necessity of forming a government of limited jurisdiction, and of upholding local sovereignties. When this principle of perfect equality was invaded in the formation of the House of Representatives, the majority of her delegates withdrew from the convention, and this State for a long time refused to ratify the Constitution, and only yielded its ultimate assent upon the express understanding that it should be so amended that doubtful or implied powers would be cut off. The noble and resolute stand taken by New York induced the national convention to limit the authority of Congress. It also did much to secure amendments to the Constitution, which contain guarantees of the rights of the States and the liberties of the citizen. It was New York that took the foremost stand in favor of State rights and local self-government, those vital principles of our political system

which baffled the predictions of European statesmen, that the original thirteen States could not be held together under one government,—principles which to this day bind together our land, although it has extended threefold, until it is as broad as all Europe.

Questions relative to the authority which governments ought to possess, have entered largely into our political discussions. I can say, without touching upon partisan grounds, that the policy of decentralization of political power has constantly gained favor with the American people. It is generally supposed this doctrine had its origin in Virginia. The delegates from that State in the national convention, contended for large grants of authority to the general government.

It has been truthfully said that the wisdom of our institutions exceeds the wisdom of their founders. They established principles of more scope and influence than their authors foresaw. The germ of the township system existed in Holland, was introduced from thence, and perfected here by causes independent of the political sagacity of our fathers. The condition of our country is rapidly developing this policy. Equality of rank and the necessities of a thin population on the borders of a boundless wilderness, made all other arrangements unsuitable. It was most rapidly spread in New England, for the growth of her colonies was the most rapid. For this reason it has been supposed by many historians to be of New-England origin. More correct investigations into governmental history, show that it was a feature in the government of Holland long before the settlement of America. The relationships which that country bore to New Netherlands and to the Pilgrims, entitle it to the honor of its introduction here. It is undoubtedly true that at first it was regarded merely as a convenient mode of conducting public affairs, and that it had no higher value in the minds of the early colonists. None foresaw its future importance. This system of local self-government keeps at home the mass of political power. It yields it to the remoter legislative bodies

in diminishing proportion as they recede from the direct influence and action of the people; it does not regard the central government as the source of authority, from which it percolates in limited measures to the lower jurisdictions. The vital principle of self-government is not the mere demagogical idea that the people, in their collective capacity, are endowed with a wisdom, patriotism, and virtue superior to their individual characters. On the contrary, the people as a society are as virtuous or as vicious, as intelligent or as ignorant, as brave or as cowardly, as the persons who compose it, and will always be viewed accordingly, by every straight-forward man. The great theory of local self-government under which our country is expanding itself over our continent without becoming weak by its extension, is founded upon these propositions. That government is most wise, which is in the hands of those best informed about the particular questions on which they legislate; most economical and honest, when in the hands of those most interested in preserving frugality and virtue; most strong, when it only exercises authority which is beneficial in its action to the governed. These are obvious truths, but how are they to be made available for practical purposes? It is in this that the wisdom of our institutions consists. In their progress, they are developing truths in government which have not only disappointed the hopes of our enemies and dissipated the fears of our friends, but give promise in the future of such greatness and civilization as the world has never seen.

The legislation which most affects us is local in its character. The good order of society, the protection of our lives and our property, the promotion of religion and learning, the enforcement of statutes, or the upholding of the unwritten laws of just moral restraints, mainly depend upon the virtue and wisdom of the inhabitants of townships. Upon such questions, so far as they particularly concern themselves, the people of the town of Kirkland, in the county of Oneida, are more intelligent and more interested, than those outside of their limits can be for them. The wisest statesmen, living

and acting at the city of Washington, cannot understand these affairs, nor can they conduct them as well as the citizens upon the ground. What is true of Kirkland, is true of the other ten thousand towns in the United States. When we shall have fifty thousand towns, this system of government will in no degree become overloaded nor complicated. There will be no more for each citizen to do than now. Our town officers in the aggregate are more important than congressmen or senators. Hence the importance to our government of religion, morality, and education, which enlighten and purify the governed and the governor at the same time, and which must ever constitute the best securities both for the advancement and happiness of our country. The next organizations in order and in importance, are boards of county officers, who control questions of a local character, but affecting more than the inhabitants of single towns. The people of the county of Oneida are more intelligent, and more interested in what concerns their own affairs, than any amount of wisdom or of patriotism outside of it. The aggregate transactions of our supervisors are more important than those of our State legislature. When we have secured good government in towns and counties, most of the objects of good government are gained. In the ascending scale of rank, and in the descending scale of importance, is the legislature, which is, or should be, limited to State affairs. Its greatest wisdom is shown by the smallest amount of legislation, and its strongest claims upon our gratitude grows out of what it does not do. Our general government is remarkable for being the reverse of every other system. Instead of being the source of authority, it only receives the remnant of power after all that concern town, county, and State jurisdictions have been distributed. Its jurisdiction, although confined within narrow limits, is of great dignity, for it concerns our national honor, and provides for the national defense. We make this head of our system strong, by confining its action to those objects which are of general interest and value, and by preventing its inter-

ference with subjects upon which it cannot act with a due degree of intelligence. If our general government had the legislative power which is now divided between town, county, and State jurisdiction, its attempts at their exercise would shiver it into atoms. If it was composed of the wisest and purest men the world ever saw, it could not understand all the varied interests of a land—as wide as all Europe, and with as great a diversity of climate, soil, and social condition. The welfare of the several communities would be constantly sacrificed to the ignorance, the interests, or prejudices of those who had no direct interest in the laws they imposed upon others. Under our system of government, the right to interfere is less than the disposition many show to meddle with what they do not understand; and over every section of our great country there are local jurisdictions, familiar with their wants, and interested in doing what is for the right. It required seven centuries to reform palpable wrongs in enlightened Britain, simply because the powers of its government, concentrated in Parliament, were far removed from the sufferings and injuries those wrongs occasioned. Under our institutions, evils are at once removed, when intelligence and virtue have shown them in their true light to the communities in which they exist. As intelligence, virtue, and religion are thus potential, let us rely upon them as the genial influences which will induce men to throw off the evils which encumber them, and not resort to impertinent meddling, howling denunciations, and bitter taunts, which prompt individuals and communities to draw the folds of wrong more closely about them.

The theory of local self-government, is not founded upon the idea that the people are necessarily virtuous and intelligent, but it attempts to distribute each particular power to those who have the greatest interest in its wise and faithful exercise. It gives to townships and counties and States the right to direct their local affairs, because they are most intelligent about their own concerns. We know there are individuals wiser and better than the mass of these communities;

but it acts upon the principle which governs us in private matters. When we are sick, we do not seek the wisest or the best man, but the wisest physician. If we wish to build, we do not look after the most learned man, but the most skillful mechanic. In the selection of agents, we choose those who are most interested in serving us faithfully. Acting upon these simple principles, the tendency of public opinion has constantly been in favor of taking power from central points, and distributing it to those who have the strongest motives and the best intelligence for its judicious exercise.

This system not only secures good government for each locality, but it also brings home to each individual a sense of his rights and responsibilities. It elevates his character as a man; he is taught self reliance; he learns that the performance of his duty as a citizen is the best corrective for the evils of society, and is not led to place a vague, unfounded dependence upon legislative wisdom or inspiration. The principle of local and distributed jurisdiction, not only makes good government, but it also makes good manhood. Under European governments, but few feel that they can exert any influence upon public morals or affairs; but here, every one knows that his character and conduct will at least affect the character and interests of the town in which he lives.

The conviction gains ground that the general government is strengthened and made most enduring, by lifting it above invidious duties, and making it the point about which rally the affections and pride of the American people, as the exponent to the world at large of our common power, dignity, and nationality.

The advancement of our State since the termination of the last war with Britain has been unparalleled. It was among the first to establish a permanent and comprehensive system of popular education. Our judiciary has ever been distinguished for its learning and probity. The work of reconstructing the whole body of statutory laws originated in this State; and its successful completion received the applause of

the most distinguished statesmen of other countries. The first steamboat, of the many thousands which navigate the rivers or oceans of the world, was launched in our waters and floated upon the Hudson. The first canal for commerce in the United States, was made by its early enterprise. At this time, we have a connected line of artificial navigation, more than a thousand miles in length. The first link of the twenty-five thousand miles of railroad which traverse the United States, was made by the public spirit of its citizens. Its numbers, which at the close of the Revolution were less than the present population of the counties of Oneida and Erie, then uninhabited save by savages, are to-day more than three millions. We are, by virtue of our population, position, and constitutional rights, the foremost member of our Union.

My purpose in this imperfect sketch of New York, has been to point out its remarkable geographical position, to do justice to the first colonists, to vindicate the claims of its early statesmen to the gratitude of our whole country, and to call attention to the patriotism of its people.

Heretofore, our citizens have been unjust to the history of their State. While our brethren, in other portions of the Union, have, with becoming and patriotic pride, recorded the services of their ancestors, and have erected monuments to commemorate the great events which have occurred within their territories, we have been indifferent to the glorious annals of the past. We are more familiar with the early history of New England or Virginia than with our own. Their citizens have, with pious care, recorded the patriotic services of their fathers, and have rendered them familiar to the entire population of our Union. While I have, on this occasion, briefly attempted to present to your consideration, some of the prominent features in the history of our State, it must not be supposed that I desire to institute any invidious comparisons between New York and the other members of this glorious confederacy. I only wish to induce you to follow their example of proper reverence for the memory of their fathers. While a monument

towers upon Bunker's Hill, exciting a just pride in the hearts of the citizens of Massachusetts and respect in the minds of strangers for the State where Freedom's battle was begun, why is it that no stone marks the spot upon the plains of Saratoga, where Freedom's fight was won? Every schoolboy in our land is taught that the first blood in the Revolutionary struggle was shed at Concord; how many of our citizens know that the first surrender of a British flag or weapon was made at Ticonderoga? The traveler who sails through Long Island Sound, sees on the shores of Connecticut, the monument which tells of the massacre of brave patriots on the Heights of Groton. But what is there to remind him who passes through the valley of the Mohawk, of the thousands who were slaughtered by ruthless savages, during the French war and the Revolutionary contest? We have all been made familiar with the services which the statesmen of Virginia have rendered to the cause of civil liberty or constitutional law; while few are instructed that the earliest contests between the rights of the people and the pretended prerogatives of the crown were commenced, and most strenuously maintained, by the popular delegates in the colonial legislatures of this State. The statesmen and the poets of New England strive to perpetuate the memories of the Pilgrim Fathers, to record their sufferings, and to hallow the very spots upon which they trod. Plymouth Rock has been made a sacred shrine where they annually pour forth their gratitude for the civil and political blessings which they enjoy. But how little is known of the more varied, and more interesting emigration to the shores of our own State! While we honor the Pilgrim Fathers, let us not forget the Hollanders, who made earlier settlements upon our shores, who made the harbor of New York a place of refuge from bigotry, intolerance, and wrong.

The past is full of noble examples, animating us with patriotic love of our State and nation; but we must not confine our attention to the past. The present and the future have their obligations. Our geographical position imposes upon us

peculiar duties in our relations to the rest of the Union. The progress of our nation will lessen the comparative importance of other States, however important they may be. It will be otherwise with us. Commanding the great avenues of commerce, of intercourse, and of events, we grow with the growth of our country. It is our duty to emulate the patriotism of our Fathers; to maintain the rights of the several States; to preserve their union, by confining the central government to the exercise of powers designed for the common dignity, defense, and welfare; and to restrain those sectional passions and prejudices, which are apt to grow up in states whose isolated positions do not give them the advantages we enjoy, of constant intercourse with the citizens of every part of our broad land.

In all that concerns New York, let us not only be mindful of the past, but in every thing that affects the education, morality, progress, and patriotism of our State, be animated by the spirit of the motto emblazoned upon its shield—EXCELSIOR.

ARTICLE III.

The Post Office in the United States and England.

By Pliny Miles, Esq.

Nearly all seem to feel, and no one can deny, that rapid and secure postal intercourse is of great importance; but comparatively few realize the great value of a postal system in its highest perfection. The vast difference between a good system and a poor one is scarcely appreciated by the great mass of our population, in the comparatively imperfect postal system of this country.

You have often heard comparisons made between the post-offices of Great Britain and the United States, and high encomiums bestowed on the former. I trust that no one is disposed to say that these encomiums are not well deserved; and I hope, by a consideration of various incontrovertible facts, to show you that the difference between the British system and our own is yet greater than is usually considered. I trust, also, that a full examination of the two systems will convince you not only of the vast superiority of the English post-office, but that a great majority of their improvements are perfectly practicable with us.

It is hoped that the grounds taken, and the conclusions drawn, will not be looked upon as an affectation of any particular individual sagacity or wisdom, or that what I say will be considered as a general fault-finding with either the framers or administrators of our postal laws.

We learn by the example of others far more than by any intuitive perception in ourselves; and while seeking for truth, the more we have sound arguments and appropriate facts brought to our view, the more shall we be aided in our search.

A single remark is vouchsafed to those profound logicians who contend that we can have none of the improvements of the English postal system because, in fact, *this is a great country*, and the island of Great Britain measured by our standard is a small one. The political Bunsbys of the day are informed that I shall not attempt to prove that the distance from New York to St. Louis, or from Bangor to San Francisco, is as short or as quickly traveled as the iron road from London to Liverpool, or the steam voyage from Westminster bridge to Woolwich dock. While making comparisons between the English postal service and our own, I shall endeavor to bear in mind the different circumstances that govern the traffic of the two countries. No one will deny that our postal wants are as great as those of the inhabitants of the British isles; and, in fact, postal communication is of far higher importance with us, where distances are so great and personal intercourse attended with greater expense and inconvenience. Our intellectual activity, and our social wants as a people, if not superior to all other nations, certainly cannot be ranked behind. It will strike many as not only an important and interesting fact, but as quite an inexplicable one, that from the first organization of our national government to the present time our correspondence and postal intercourse, the uses of the Post Office, have increased from nine to sixty times as fast as either the population, the government income and expenditure, the exports, or any other branch of national affairs. Our population, between 1790 and 1850, increased seven-fold, our exports twelve-fold, and postal correspondence four hundred and forty-fold. The actual percentage of increase of our letter communication by mail from 1790 to 1850 was 43,965! The figures that show most clearly the far greater activity and larger increase of our postal intercourse beyond the increase of population, wealth, and national income and expenditure, are these, —During each ten years, since 1790, the average increase of the population of the country has been 34 per cent., the exports 42 per cent., the expenses of government 95 per cent.,

the post-office revenue 120 per cent., and the number of letters sent by mail, 140 per cent. This is the average increase during each of the six periods of ten years from 1790 to 1850.

Thus, while our population has increased in sixty years seven-fold, letter correspondence by mail has increased four hundred and forty-fold, or sixty-three times as fast as our population. In the year 1790, there were sent by mail in the United States, about 560,000 letters; and during the year 1854, over 100,000,000. After all these gratifying evidences of the increased value and use of our postal system, how will you be prepared for the fact that during the last four years, since 1850, the inhabitants of Great Britain wrote and sent by mail 200,000,000 more letters than we have sent through our mails since the organization of our government, more than sixty-five years ago? Is this a good comparison between our government and that of Great Britain? between our population, where the benefits of education are extended to all, and the population of the British isles, where at least one half of all that marry cannot sign their names to the marriage register, but are obliged to make their mark? According to the official postal statistics of 1851–2 and '53, the population of Great Britain write and send by mail four letters where our people write one. Each thousand persons in Great Britain write on the average 14,760 letters annually, while each thousand of the population of the United States write 4,121, or only about four letters to each man, woman, and child in the country. In London, there are forty-one letters written to each individual, while in New York there are but twenty-three. This is according to the report of 1852.

The members of the Geographical and Statistical Society are well aware of the value and importance of statistics; and though I shall not read the formidable columns of figures that I have, a copy of them will be furnished, if desired, to preserve with the papers and transactions of the Society. The figures given are from official reports, and may be relied on. When any facts or data are required for which there are no

official tables, careful estimates have been made, but in all cases the estimates are given as such, and not as official reports.

With the aid of two experienced officers of the Post Office Department, I have prepared a table of estimates of the number of letters sent through the mail since the year 1789. The estimate cannot vary from the actual number, either way, probably more than five to ten per cent. The number, in 1790, is given as 265,545; in 1800, about two millions; in 1815, over seven millions; in 1825, ten millions; in 1840, forty millions; and during the last year, 119,634,418. In Great Britain, the year before last, the number of letters written and sent by mail was 410,000,000. During the sixty-five years from 1790 to 1855, the number of letters sent through the mails in the United States, according to our estimate, is 1,393,930,814. During that time, the number of our post-offices has increased from 75 to 24,000, and the length of post-roads over which the mail is carried, from 1,875 miles to 219,935 miles. The postal revenue in 1790, was $37,935, less than five times the present salary of the Postmaster-General; and during the year 1854, the income from letters alone was over six million dollars. But with all the improvements, and the constantly increasing demands upon our Post Office, it is evident that there is something lacking in our postal system, some good reason, independent of long distances and scattering population, why our people only use our Post Office to one-fourth the extent that the population of Great Britain do theirs. I shall not argue that the expenses of our Post Office should be thrown on the Treasury, like the other departments of government; though there are many and powerful reasons why this most necessary of all our national transactions should be conducted with the highest degree of efficiency, without regard to the cost.

I am positive that a lower rate of postage than we now have, with a well-organized system, and an economical administration of its affairs, will fully meet all the necessary expenses

of the postal service, and at the same time give postal facilities and accommodations to the public, to a far greater extent than we have ever had. I wish to take no view of the subject but a purely financial one, and am confident that we can double the accommodations we have at present, and for less money than we now pay. The fact that I have lived several years in Great Britain, and had a large correspondence through the Post Office there; and, since that time, had a full opportunity to become acquainted with our own postal system, by holding an official position in the Post Office Department at Washington, makes me speak with greater confidence than I should from only a theoretical knowledge of either or both systems.

When the country was new, and there was now and then a village or a small settlement scattered here and there in the wilderness, no one could reasonably expect the post to be in close proximity to every house; and many families were necessarily ten, twenty, or fifty miles from a Post Office.

With all due deference to those who had the framing of our postal laws, there has not been one single step made in advance of that system which gives a single Post-Office in each town, city, and village, and which obliges every one to go after his letters, no matter how dense the population, or how large the place. Every improvement has consisted in extending the means of transportation, and increasing the size of Post Offices, as the country became more thickly and widely populated. Not one single facility for local distribution of letters in large places has been given; no sub-Post Offices or receiving-houses, no legally authorized and paid letter-carriers, but precisely the same local accommodations that were enjoyed by our ancestors one hundred years ago.

When New York was a village of a few thousand inhabitants, on the lower end of Manhattan island, some Dutch burgomaster, local magistrate, or colonial governor, set up a Post Office near where Wall street now runs. A few steps would bring every citizen from his house or store to the Post Office;

and when a vessel happened to arrive from Europe, with "three months' later news" than the packet ninety days previous had brought, there was a foreign mail; and the event was so important and so rare, that all would assemble to get their letters, talk over the news, and compare notes. When, once in a week, or perhaps once in two weeks, a post arrived from Albany, from Boston, or from Philadelphia—there was a mail from the country, and another gathering took place at the Post Office, and letters were again delivered. Since those days the American colonies have grown to a mighty empire. New York numbers about 700,000 inhabitants, and a dense population extends for more than six miles, while villages, schools, and habitations, are scattered along the entire length of the island. And what are the present Post Office accommodations for this great metropolis—this modern Babylon? Why, precisely what they were in the days of the Dutch governors of New Amsterdam, one hundred and fifty years ago. There are Wall and Front streets, Nassau and William streets, and there stands *the* Post Office; and every letter that is mailed, and every letter that is received, must be sent to that locality, or called for there, unless it is trusted to some uncertain, unofficial, and precarious source. Yes, New York city has just one Post Office. London, with about three times the population, has 498 Post Offices; Manchester, with about half the population of New York, has 107; Liverpool has 56; Bristol, 90; and Glasgow, 77. This is a direct comparison between an American and an English city. Now, I respectfully submit that the business of the local circulation of letters with us is precisely parallel with that in the cities of Great Britain, and subject to the same financial laws, considered as a subject of public and private economy. What will answer best in the one case, evidently will in the other. But how widely different are the two systems,—theirs and ours! And as widely different are the results. Their local circulation is aided, fostered, and carried on by means of sub-Post Offices, receiving houses, and letter-carriers; while we have none of them. Their local

circulation of letters is more than one hundred times as great as ours, is a source of large profit to the Post Office Department, and, at the same time, furnishes the greatest accommodations to all their citizens. Our local circulation, on the other hand, pays nothing to the Department, and our citizens are not accommodated. We are not required by courtesy, truth, or the circumstances of the case, to speak of the few irresponsible persons that go about our cities delivering letters and papers, for a fee, to those who choose to employ and trust them, as a part of our postal system. Nor can we, by any stretch of the imagination, call those places Post Offices where, in Broadway and Union Square, persons that hold no commission under government, are permitted to receive and forward letters to the city Post Office, provided they are paid a separate postage for it. Few trust them; there is no official responsibility; and in no respect can they be called a part of our national Post Office, any more than a servant would be who should be hired to call every day at house or office, get our letters, mail them, and bring ours from the office on his return.

It is a great mistake to suppose that letter-carriers and letter-receivers are a charge on the postal revenue. On the other hand, they are a source of large profit, and by means of them correspondence is increased far more than the amount of their salaries. But were they a direct expense, and were it an expense of a million dollars per annum to have letter-carriers and letter-receivers in our cities and towns, I venture to say that it is as much the duty of government to furnish them as it is the business of government to keep up a postal system, after making it illegal for States, communities, or private parties, to do it for themselves. But there is no consideration of that kind. There is no extra expense, as I shall proceed to show. Let us imagine, for argument's sake, that we have a uniform rate of postage of two cents for each single letter, without regard to distance,—"drop-letters" the same as letters for all distances throughout the country. Now, all could afford to pay two cents for each drop-letter, if every

letter for the longest distances in the country went for the same money. In this case we are supposing that we have a universal letter-delivery, and sub-Post Offices and receiving-houses at convenient distances in all cities and large towns. By this arrangement we save all our box-rent at Post Offices; we have a safer conveyance of our letters than to have them entrusted to our servants; we get all our letters from 33 to 80 per cent. cheaper than we do at present rates, and for the merely local letters—drop-letters—we pay no more than we now do if we receive them by the irresponsible letter-carriers that are suffered to go about our cities. We see the convenience and the economy of it, so far as the public are concerned; and now let us notice the financial results on the Post Office. As in other branches of postal service, we can judge of it by seeing its operation in Great Britain. I have shown you, by reference to the figures, the far greater number of letters written and sent by mail in Great Britain than with us. There, as here, all the profit of the Post Office Department is made by the correspondence of the cities and towns. But, there, so much superior is their system to ours, they write about as many letters in one city—in London alone—as we do throughout our vast and extended country. They have a local circulation of letters—a circulation that depends almost entirely on letter-carriers and letter-receivers, and which increases their correspondence, and enhances the profits of their postal system, far beyond the entire postal traffic of the whole United States.

Will it be readily believed that the "drop-letters" of the city of London alone amount to more that fifty times as many as the "drop-letters" of the whole United States? Such is the actual fact. Here are the figures from the official reports of the two countries:—The "drop-letters" in London, in 1851, numbered 40,585,952, while the number in the United States, according to the official report of the same year, was 715,428—less than a fifty-sixth part of those in London alone. The entire number of letters mailed in London, during 1851, for both

local and general circulation was 88,405,461; while in the whole United States, during the same year, there were but 95,790,524. The local circulation of letters in cities, is almost entirely dependent on the letter-carriers and the letter-receivers—keepers of the small local "receiving-houses," where letters are mailed. Then, as we have seen that our local circulation of letters is a mere nothing and that in English cities very large, we must admit that what is paid for such local letters, beyond the wages of carriers and receivers, is clear profit. Besides all this, they receive all the letters for country circulation, and add considerable to that circulation, beyond being of immense accommodation and incalculable advantage to the public.

The letter-carriers and receivers in London, with their wages, are as follows:—

	No.	Salaries.
Letter Carriers,.....	1,385	$470,275
Letter Receivers,.....	498	91,435
Total Carriers and Receivers,.....	1,883	$561,710
The postage on London local letters, is,.....		$1,225,000

This shows a clear profit of over $600,000 on London "drop letters." Besides the vast convenience to the public, more than one half of the postage on such letters is clear profit to the Post Office Department. The following statement gives the number and salaries of all the letter-carriers of Great Britain:—

	No.	Salaries.
Letter Carriers in cities and towns,.....	4,395	$804,515
Letter Carriers in rural and suburban districts,.....	4,326	601,420
Total in the United Kingdom,.....	8,721	$1,405,935

Here we see that the profits on the "drop-letters" in London alone, pay more than six sevenths of the salaries of the 8,721 letter-carriers of the United Kingdom.

The following table gives the population, the receipts from postages, the entire local expenses—pay of postmasters, clerks, letter-carriers and receivers, and contingent expenses; all, except expenses of transportation,—in the several places mentioned, in the year 1854, the last column showing the per-centage of expenses, or proportion that the Post Office expenses bear to the receipts:—

PLACES.	POPULATION.	RECEIPTS.	EXPENSES.	PER CT.
London,	2,362,236	$6,109,651	$1,078,290	17
Liverpool,	375,955	482,725	70,145	14
Manchester,	316,213	383,985	63,825	16
Birmingham,	232,841	192,768	36,820	19
Bristol,	137,328	148,763	30,790	20
Preston,	72,136	33,766	7,000	20
Leicester,	60,584	36,496	8,245	22
Limerick,	53,448	37,357	8,405	22
Total [the eight cities],	3,610,731	$7,425,711	$1,303,520	17
Rest of Kingdom,	24,222,760	5,743,012	2,030,000	35
The entire Kingdom,	27,833,501	13,159,723	3,333,520	25
New York,	515,547	$619,143	$130,175	21
Philadelphia,	340,045	201,891	50,254	26
Baltimore,	169,054	136,581	35,023	25
Boston,	136,881	194,943	54,779	29
New Orleans,	116,375	96,309	34,031	35
Cincinnati,	115,436	85,423	27,121	32
St. Louis,	77,860	45,632	21,220	46
San Francisco,	34,776	93,737	55,865	61
Total [the eight cities],	1,505,974	$1,473,659	$408,468	28
Rest of U. States,	21,685,902	4,781,927	2,590,948	54
Entire U. States,	23,191,876	6,255,586	2,999,816	48

We see by the above figures that eight of the large cities of Great Britain, containing only 13 per cent. of the population, contribute 56 per cent. or more than one half of the entire postal income of the kingdom. While the receipts in these amount to 56 per cent. the expenses are only 39 per cent. of the entire local postal expenditures. The eight American cities contain 6 per cent. of the population of the country, and contribute 23 per cent. to the postal income; while the expenses are about 13 per cent. of the local Post Office expenditures.

The following table gives a different arrangement and different dates. The population is the same, according to the census of 1850; the receipts of the American offices, according to the official report of 1851; the number of letters, according to the report of 1852; and the receipts and letters in the offices of Great Britain, according to the report of 1853. Reports for all these places could not be obtained for the same year, but the conclusions we arrive at will differ very little in consequence of the difference of dates. The last two columns give the sum of money paid, and the number of letters written by each thousand persons in the average of the population:—

PLACES.	POPULATION.	RECEIPTS.	NO. OF LETTERS.	RECEIPTS PER 1000	LETTERS PER 1000
London,	2,362,256	£5,641,414	97,218,337	£2,338	41,160
Liverpool,	375,955	447,797	14,204,545	1,194	37,778
Manchester,	316,213	366,049	11,810,604	1,158	37,375
Birmingham,	232,841	175,085	5,745,700	754	24,660
Preston,	72,136	31,646	1,032,621	439	14,342
Leicester,	60,584	33,856	1,097,160	564	17,986
Limerick,	53,448	33,001	1,064,890	634	20,092
Seven cities,	3,473,413	6,728,848	132,173,957	1,937	38,029
Kingdom,	27,833,501	12,872,040	410,817,489	462	14,760
Do. except London,	25,471,265	7,230,626	313,599,152	284	12,312
New York,	515,547	$531,831	12,357,118	$1,032	23,948
Philadelphia,	340,045	197,019	4,760,395	579	14,001
Boston,	136,881	176,757	4,485,245	1,300	32,739
Baltimore,	169,054	99,671	1,732,743	539	10,253
New Orleans,	116,375	117,887	1,835,708	1,016	15,825
Five cities,	1,277,902	1,123,165	25,171,209	880	19,696
Balance of U. S.	21,913,974	3,892,874	70,619,315	178	3,223
United States,	23,191,876	5,016,039	95,790,524	216	4,131

We see here the vast disparity in the use of the Post Office in the two countries. While the population of Great Britain averages nearly 15 letters to a person annually, the American population averages 4 letters to a person. The residents of the seven cities of Great Britain write 38 letters to a person annually, while our city population write but 19. We see with us,

as in Great Britain, it is the cities that the Post Office Department is principally dependent on for postal receipts and postal profits; and yet so far from having this local circulation fostered, drawn out, and as it were harvested both for the profit of the Department and the convenience of the citizens, it is entirely neglected. Would it be believed in any country in Europe, were any person to be told that we have not one particle more postal accommodation, or Post Offices any nearer together, on New York Island with a population of 600,000 people, than in any of our country districts? We have more Post Office clerks here certainly, as there must be to do the work; but that is simply laboring persons in proportion to the amount of labor to be done, and not an extension of postal accommodations. It is a positive fact that in many country districts they have Post Offices nearer together than we have here on New York Island. There is the same paucity of postal accommodations in Boston, Philadelphia, Baltimore, and other cities. I mentioned this lack of local sub-offices and receiving-houses to Mr. Rowland Hill, during our conversation in November, 1854; and he laughed, and said really he was not aware how far behind-hand we were in postal facilities. The following figures show the number of employed persons, their salaries, and the local expenses of the Post Offices of Great Britain:—

EMPLOYES.	NO.	SALARIES.
Postmasters,	974	$431,305
Clerks, Stampers, and Sorters,	1,882	857,010
Total in the 974 Post-Offices,	2,855	1,288,315
Sub-Postmasters and Letter-Receivers,	8,561	473,485
Letter-Carriers in Cities and Towns,	4,395	804,515
Letter-Carriers in Rural Districts,	4,326	601,420
Total Carriers and Receivers,	17,282	1,879,420
Contingent Expenses,		165,785
Grand Total,	20,138	3,333,520

Here are more than 20,000 persons employed in the Post Offices and sub-Post Offices of Great Britain, and in the delivery of letters; and of these, over 17,000 are letter-carriers and letter-receivers. Their wages amount to nearly $1,900,000, and yet the profit on local letters in London alone furnishes two thirds of the entire sum. Can there be a doubt but the letter-carriers and letter-receivers in Great Britain are a source of immense profit to the Post Office Department, aside from the convenience to the public?

I have dwelt at greater length on this branch of the subject in consequence of its possessing a two-fold interest,—one of convenience to the citizen, and, in fact, a right to demand, and the weighty reason that it will have so good an effect on the balance sheet of the Post Office Department. Let our system once pay its way well, and our representatives and senators in Congress will be ready to increase our postal facilities, and multiply the Post Office conveniences, not only in our cities but in our rural districts and back settlements. But it scarcely seems to be appreciated, that unless our postal system is made what it should be—made to accommodate the public—it never can be supported well, or show a fair balance sheet at the end of the year. At every request to extend postal facilities to our citizens, whether in the large cities or in the frontier towns, there is one reply; and that is, "There is no money, the Post Office is in debt, and you cannot be accommodated." Very likely if we had not more than half the Post Offices that we now have, and our mails were to go at only half the speed they do at present, we should find the Department five millions in debt at the end of the year instead of two. Cut off two thirds and three fourths of the postal facilities that we now have, and very likely our mail-bags would be empty, and postmasters have nothing to do. But give increased facilities for correspondence in our large cities and towns, give us low and uniform postage, rapid conveyance and punctuality in delivery, and give us letter-carriers and receiving-houses, cut off the franking privilege, and have

Government pay its own postages,—and see then if we cannot have a self-sustaining post-office.

The great postal reform so auspiciously introduced by Mr. Rowland Hill, in Great Britain, in 1840, is very imperfectly appreciated in this country. There seems to be a very general impression that that reform consisted in the introduction of a low rate of postage—the penny postage. Part of the improvement did consist of a cheap postage, but the ground work of the reform was in UNIFORMITY OF POSTAGE. By uniform rates of postage, labor was so simplified, that in proportion to the circulation, there was an actual saving of more than two thirds of the expense. It is not asserting too much to say that we have no appreciation of the vast benefits of uniformity of postage in simplifying labor and reducing the expenses of our postal system. We do not know the enormous tax that we pay for the extra useless labor entailed on our postal system, through this lack of uniformity. Were we to assert that there was positively four times the labor and expense of receiving, stamping, and mailing letters, supplying stationery, and attending to the various duties in our post-offices, that there is in Great Britain, we should undoubtedly be asked for proof. And proof we can give. There is no difficulty in arriving at the correct cost of each branch of the postal service, and finding the amount of labor as well as expense in each. In mail transportation there is a difference between our country and Great Britain. But in the internal arrangements of the Post Offices, and the duties of receiving, stamping, and delivering letters, the cases are certainly parallel. The entire expense of the British Post Office, in 1853, was $7,003,399. This was made up of the following items:—

Conveyance of the mails,	$2,868,585
Surveyors, or special agents,	165,685
Colonial postal expenses,	87,775
Expenses of the money-order office,	362,625
Letter-carriers,	1,405,935
General Post Office and Miscellaneous,	672,574
Total General Expenses,	$5,864,289

Compensation to Postmasters, Sub-Postmasters, and Clerks, Expense of Stationery, Rent, Fuel, Lights, etc., etc.,	$645,245
Expenses of the London City Post Office,	402,430
London Letter-Receivers,	91,435
Total expenses for work, etc., in the Post Offices,	1,139,110
Grand total: Entire postal expenses,	7,003,399

The expenses of the United States Post Office in 1853, amounted to $7,982,756, consisting of the following items:—

Mail transportation,	$4,906,308
General miscellaneous expenses,	703,700
Total general mail expenses,	$5,610,008
Compensation to Postmasters,	1,821,473
Salaries of Clerks,	509,820
Stationery,	41,454
Total for work, etc., in Post-Offices,	2,372,748
Grand total: Entire postal expenses,	$7,982,756

We have here $2,372,748 for expenses in our post-offices, to go against $1,139,110 in the post-offices of Great Britain; but as we have in round numbers 25,000 postmasters, while the whole number of postmasters and sub-postmasters in Great Britain amount to but little over 8,000, the circumstances are not equal. We will then deduct from the expenses of our post-offices two-thirds of the amount of all the salaries of our post-masters (1,214,316), and that will leave $1,158,432 to go against the sum of $1,139,110, for the same kind of services in Great Britain. Now, we have taken away 16,000 of the laborers in our postal service; and if we once suppose that the remaining postmasters and clerks could attend to the work, what do we get as the result of their labors? It is certainly not to be supposed that they could do the work with our complicated and heterogeneous system; but if they could perform it, how does

it compare with the results of the labor in the British Post-Offices. In 1852, there were 95,790,524 letters mailed in the United States; and in Great Britain, during the same year, 379,501,499. According to the above expenses, every million letters in the United States cost for despatch and reception—independent of transportation—the sum of $12,067, while the same number in Great Britain cost $2,998, being less than one-fourth the amount. Were the British method of doing business as complicated, laborious, and expensive as ours, their 397,000,000 letters would have cost in the stamping, mailing, and handling, $4,585,460, instead of $1,139,110, and this besides transportation and general post expenses. On the other hand, were our system as simple, uniform, and, in consequence, as cheap as theirs, our 96,000,000 letters would have cost $287,908, instead of $1,158,432; or we could have despatched 400,000,000 letters at the same cost and trouble that it now takes for less than one fourth of that number.

Nothing is said of papers, books, and pamphlets; but as they are similar in both countries, it would not affect the general result. If we added to the expense of the Post Offices of Great Britain as given above, the salaries of all the letter-carriers in the kingdom ($1,405,935), it would only raise the amount to $2,545,045; and this would only be about $6,000 for every million letters, not far from half the sum that our letters cost. These gigantic results in the British Post Office are most certainly attained in simplifying labor by making postage uniform. It may appear at first like a small matter that we have three rates of letter-postage, one for drop-letters, one for general post-letters that go less than 3,000 miles, and another for distances beyond 3,000 miles. It may appear to be of little consequence that we have two methods of paying for our letters, either in stamps or in money, and that we have three methods of computing the rates of postage by weight. But these are not small matters, or unimportant. In the mailing and delivery of a hundred million letters, and the management of 25,000 post-offices, it is a question of millions of dol-

lars. So long as we go on the principle that our Post Office must sustain itself, it becomes a question of high or low rates of postage. Were every rate and process in our postal system reduced at once to the greater uniformity and simplicity, the single rate of letter-postage might to day be put at one cent and a half instead of three and ten cents, and have our Post Office revenue and expenses as nearly balanced as they are at present.

By the English system every letter is charged at the same rate, drop letters and letters for any distance within the kingdom. All go by weight,—one penny for those under half an ounce, and double the sum up to an ounce; and beyond that half-ounces are not reckoned; but all over one ounce and less than two ounces are charged four postages, and so on for heavier letters. And then, at all offices except in London, letters must be prepaid by stamps only or not at all, money not being received in payment for letters when they are mailed. And postmasters and clerks are not obliged to weigh or rate letters for the public. Every one must weigh or rate his own letters and any and all postages not prepaid, are to be charged double. Now, see how different, how complicated, laborious, and inconvenient is our system. In the first place there are three rates of postage, one cent for drop letters; three cents for letters that go less than 3,000 miles, and ten cents for those that go over 3,000 miles. Then, we have three methods of rating letters by weight. Drop-letters are all the same postage without regard to weight; letters that circulate through the mails, but not going out of the country, are charged a single postage for each and every half-ounce or fraction of a half-ounce; and letters to foreign countries are rated like the letters in England, a postage for each half-ounce up to an ounce, and then two postages for each half-ounce or fraction of an ounce. Then, as if these three rates of postage and three different methods of rating did not make it complicated enough, there are two ways of receiving postage, either by money or by stamps, thereby obliging the postmaster to

keep a double set of accounts, one for cash-paid letters, and one for those paid by stamps. The new law does not improve much on this, for instead of obliging the public to put stamps on their letters, the law is so worded that the postmasters and clerks may be compelled to paste on the postage labels, after being at the trouble of selling them. In all transient books and pamphlets there is the same lack of simplicity and uniformity, the postage being one cent for every ounce in weight, thereby making it a matter of necessity to weigh every book or pamphlet. Why not have the same rates for weights less than a quarter of a pound, so that a book or pamphlet weighing four ounces shall be two cents, over four and not over eight ounces, four cents, and so on, two cents for each quarter of a pound, or four cents for each half-pound, beyond the first? The English postal system recognizes no separate rate except by half-pounds; and that is all-sufficient for every thing that weighs half a pound or over. Then the weight, or near enough to establish the rate of postage, can in most cases be judged correctly without weighing.

Have all letter postage reckoned by weight, two cents for a single rate of half an ounce or under, and reckon no half-ounces beyond the first ounce; and simplify the rates of postage for books and pamphlets, by reckoning no odd weights of less than four ounces, up to the first half-pound, and nothing less than half-pounds beyond that. Do away entirely with one and three and ten cent stamps, and have new ones of two, four, eight, and twenty-four cents; and oblige the public to weigh and rate, and put stamps on their own letters; and allow any letters to go that are not prepaid—unless the postage is higher than sixteen cents; but take nothing that is not prepaid, if there is a higher sum due on it than that,—and receive no money in prepayment for letters; and charge each and every postage double that is not prepaid. Have nothing go by mail at less than two cents, charging that sum for every letter, handbill, newspaper, circular, or similar package; and allow a single newspaper of any weight, or four ounces of any printed

matter to go for that sum, provided it is in a wrapper, open at the ends. Let this be done, and stop sending way-bills with parcels of letters, and more than one half of the work in our Post Offices is at once done away with. Besides the abridging of labor and the attendant lessening of expenses, it would make the entire postal system far more simple, easy, cheap, and convenient to the public. Give us in addition letter-carriers and receiving-houses, and have from four to ten deliveries a day, as in the English cities, and we shall double our correspondence in less than two years, and our postal receipts will inevitably increase far beyond the increase of expenses. When penny postage was introduced in England, the annual correspondence was more than doubled the firs year, rising from 82,470,596 letters, in 1839, to 168,768,344, in 1840.

A striking result of the benefits of uniformity in postage, as a measure of economy, is shown in the comparative cost of attending to the mailing and transporting letters in Great Britain and the United States, and in Great Britain before and after the rates were uniform. In Great Britain, in 1839, the year before the introduction of the uniform postage, there were 82,470,596 letters, and the gross expenses of the post-office amounted to $3,784,997. This shows an expense of $46 for each thousand letters. In 1853, the number of letters sent by mail in Great Britain, was 410,817,489, and the gross expenses of the post-office $7,003,399. This amounts to $17 for every thousand letters, so that in proportion to the business done, all the expenses of attending to the mail in Great Britain is only a little over one third what it was before there was uniform postage. And how is it in the United States? In 1852, the number of letters mailed was 95,790,524, and the entire postal expenses, $7,108,459, being an expense of $74 for each 1,000 letters, a strong contrast to the $17 for 1,000 letters in Great Britain. There are local circumstances that no doubt make certain branches of postal service in Great Britain cheaper than in this country, particularly the item of trans-

portation, but we have seen that the internal affairs of the British Post Offices are conducted at one fourth the expense that the same duties are with us, in proportion to the amount of business carried on. There is a certain order of minds that sees a terrible injustice in having the resident of Nassau street pay the same sum for a letter to go to Union Square or Jersey City, that his neighbor in William street, pays to get a letter to his correspondent in California, Oregon, or New Mexico. These minds must be treated with becoming tenderness. Tell one of these innocent logicians, show him by the clearest evidence in the world, that any graduated scale of postages, few or many, where the pay is according to distance, cannot be carried on with a better financial result and more profitably than the very lowest of his rates, with the advantages of uniformity and simplicity, and he will then tell you that he thinks it very unjust. Can any one seriously think that there is a financial advantage in having letters between the Atlantic and Pacific States pay ten cents, with letters other distances paying three, and drop-letters one, while in consequence of these several rates, we are burdened with a varied, complicated, laborious, and expensive system? Is there any reason in believing that there is any other result than a great loss? Look at the following figures showing the gross amount of postages collected in the States and Territories mentioned, in the year 1854.

California,	$255,188
Oregon Territory,	1,495
Washington Territory,	1,528
Utah Territory,	1,857
New Mexico,	906
Total,	$270,974

If we deduct one third of this for the postage on local matter, we shall have $180,646 for the postage on letters and papers going over 3,000 miles, and which is charged double the rate of mail matter sent less than 3,000 miles. One half of

this, $90,323, may be considered as the profit or surplus derived from the high rate of postage. If we add to this, an equal sum for the postages collected in the Atlantic States on mail matter going to the Pacific, we shall have $180,646 as the gain accruing to our Post Office Department from the double rate of postage for long distances. And what does it cost to collect this sum of $180,000? Why, it costs at the least calculation, over a million and a half of dollars, or more than eight times the sum gained; and we respectfully submit that the facts, figures, and arguments advanced conclusively prove it. Those of our citizens who reside on the Pacific coast, the laborious miners, the patient agriculturists, the hardy pioneers, and the enterprising merchants, are, I believe, at this period experiencing hard times. California, we are told, adds sixty millions annually in hard coin to our circulation, being an actual creation of this amount of wealth, all of which goes to benefit the nation at large. And yet this brightest jewel in our starry galaxy, this golden setting to our national casket, must be taxed an extra sum for their postage. They and their neighbors on the Pacific and their far-off friends in the old States, are taxed the sum of $180,000 annually in an extra rate on their letters; and it costs between one and two million dollars to collect the impost!!!

But we are spared a further consideration of the manifest injustice of having a portion of our citizens charged heavier than others purely in consequence of their living or transacting business in a certain locality. It is sufficient for our purpose that it creates a great burden on the whole country, and as a purely financial question, costs nearly ten times as much as it comes to. There is a certain popular fallacy in this country respecting the operation of the penny postage in England, and that is that it costs a penny a letter to transport and attend to their letters. It really *costs* but about one half-penny, or one cent a letter, the balance being clear profit, and going into the treasury to the amount of several millions a year. The gross receipts of the British Post Office for 1853, amounted to

$12,872,039, and the expenses to $7,003,399; at the usual increase, the gross revenue for 1854 would amount to $13,159,723, and the expenses to $6,718,558. This leaves a clear profit of $6,441,165. This amount of profit will be reduced somewhat in consequence of a part of this being profit on foreign, transmarine, and colonial postages. This profit amounts to the sum of $1,648,001, and after making a suitable deduction for expenses of these letters, and the portion due for transportation within the country, there will be an actual expense of 11¼ mills (our currency) for each single letter. It is well known that newspapers pay no postage in England, the penny stamp on the paper—by virtue of which they pass free through the mails—going to the national treasury as stamp duty. The equitable amount of postage for newspapers in Great Britain, cannot be reckoned at less than $750,000 annually.

Because one penny—two cents is the letter rate of postage in England, and because that country is smaller and more densely populated than our own, our Post Office logicians jump at once to the conclusion that we cannot have as low a rate as that. These conclusions are on the false basis that letter-postage *costs* a penny in England, while, as we have seen, it only costs a mere fraction over a half-penny. As a supposable case, we will imagine that letter-postage in England was reduced in 1840, to two-pence instead of one. Let us suppose further, that this rate of two-pence only just defrayed the cost of the mail service, after a fair trial. Now, with this example of two-pence postage in England—four cents our currency—defraying the expenses of mail service there, had some one proposed a rate of eight cents in this country—just double the rate in England—it would not probably have been considered very unreasonable that such a rate of postage would be a paying one. Now, as a logical sequence, it is just as false reasoning to contend that we cannot have a two-cent rate here that will pay, provided one cent pays in England, just as readily as eight cents would pay here, provided it costs four cents there.

As I have stated that I mean to take a financial view of the Post Office Department and the postal service, I should be doing injustice to the subject and to my own feelings were I not to allude to the largest waste, the heaviest expenditure, and the grossest injustice in our entire postal administration. I allude to what is usually called "the franking privilege." If a farmer whose land, location, and materials were entirely unfitted for the grape culture, should expend three hundred dollars a year for green houses, fuel, and labor, and get as a reward a few pounds of grapes, while at the same time he could purchase a larger quantity and a better article in the market, for less than ten dollars, we should say, that as far as the pecuniary results were concerned, it was decidedly a losing business. I do not wish to attempt to make mountains out of mole hills, but when I say that the United States are taxed some two millions dollars a-year to support the franking privilege, and that it comes altogether out of our postage money and correspondence, and that the actual berefits to every person that receives any benefit at all, and reckoned on the most liberal scale, and by every possible standard of value, cannot amount to $200,000, I am asserting what is a clear and indubitable fact. A postal system is established and kept up by government for the convenience and benefit of the nation. By a certain enactment Congress designates certain officers, and among them all the individuals comprising their own body, and says that these officers shall send through the mails any and all printed or written matter that they choose free of postage. Under this regulation articles of the most miscellaneous and heterogeneous description are sent in the semblance of a book, and these, with printed and written documents, form a very large proportion of our mails; one quarter or one third. Contracts are made with certain persons and companies to transport the mail over 250,000 miles of post roads; clerks are hired, and the expense attending the mail matter sent, is, of course, proportionate to the quantity. For this large portion of the mail matter that

goes free, the expense of handling and transporting must come out of somebody; and it falls on those who use the mails. Were this free matter to form nine tenths of our mails, instead of one fourth or one third, and the postage on the one tenth sent by the citizens would not defray the expenses of it all, then we should probably have a law raising our rates of postage,—not to defray the expense of our letters and papers, but the expenses of the matter sent by government; while there would be just as much justice in taxing those persons who write letters and read newspapers, and none others, to get money to carry on a war with the Indians, or to maintain fleets and armies.

We know there is such a thing as the franking privilege, and we know it is a source of great dissatisfaction to the bulk of our population, and that it is said to be subject to great abuse. All these things are proverbial, and yet I am positive that not one half of this enormous and gigantic fraud is seen or appreciated by our people. It is a fraud, for while this omniverous system is swallowing up millions of our postal revenue, we are denied mail facilities of the most pressing necessity, and all under the plea that the Post Office Department does not support itself. Let us put this subject like others, to the test of figures and statistical calculations, and see how it will bear examination. Fortunately we are not obliged to grope in the dark on the subject, or rest on conjecture or opinion. An official statement made by the city postmaster at Washington to the chairman of the Committee of Post Offices and post roads, in the House of Representatives, shows the following as the quantity of mail matter sent from Washington during the month of January, 1854, upon which no postage is collected, and showing the amount of revenue that would accrue if the same was chargeable with postage, and prepaid:—

Number of letters franked by members of Congress, ...	77,727
Weight of the same in pounds, ...	3,446
Amount of postage on the same, if prepaid, ...	$4,663 62

Weight of Public Documents franked by members of Congress,	*lbs.*693,508
Amount of postage on the same, if prepaid, ...	$110,961 20
Weight of letters franked by executive offices, ...	*lbs.*7,065
Amount of postage on the same, if prepaid, ...	$6,782 40
Weight of newspapers, ...	*lbs.*111,002
Total amount of postages on the above (the newspapers excepted), for one month, provided it is prepaid, ...	$122,407 22
Total amount for twelve months, ...	$1,468,886 64
Total amount for twelve months, if not prepaid, ...	$2,931,049 20

Without taking any account of the newspapers, here we find nearly a million and a half of dollars for free matter that leaves Washington in one year, besides all that arrives at Washington, and all that is sent free in all other portions of the country. A fair estimate would probably give three millions as the amount of postage on the franked matter annually sent through our mails. The Post Office Committee of the House of Representatives put it at $2,500,000, and we are willing to admit that as a fair estimate. The late Postmaster General calculated the postage on the free matter of Washington—going out and coming in—during two years, ending July 1, 1851, at $4,240,820, being at the rate of $2,120,410 annually. It is thus very evident that two millions and a half for free, congressional, and government mail matter is below, rather than above, a correct estimate. Now, in the name of all that is just, why is that enormous tax—as purely a government matter as supporting the army and navy—why is this sum raised by taxing our correspondence?

We will now make out a balance sheet, and see how much government is indebted to the Post Office Department,—to the citizens of the country who use the mails for postal service, during a period of, say, six years. The following table shows the gross revenue and expenses of the Post Office Department, from 1849 to 1854 inclusive, the revenue being that from postages only, the annual appropriations from the treasury for government and congressional matter being in a separate column:—

Date.	Revenue from postage.	Post Office expenses.	Appropriations that were made.	Appropriations that should have been made.
1849	$4,705,176	$4,479,049	$200,000	$2,500,000
1850	5,352,971	5,212,953	200,000	2,500,000
1851	6,351,978	6,024,567	375,889	2,500,000
1852	5,082,537	7,108,459	1,741,445	2,500,000
1853	5,240,725	7,982,757	700,000	2,500,000
1854	6,255,586	8,577,424	700,000	2,500,000
Total	$32,988,973	$39.385,209	$3,917,334	$15,000,000

If we add to the Post Office Revenue for the last six years, the sum of $15,000,000 for government postages, instead of $3,917,334, the amount that was appropriated, we shall have a gross revenue of $47,988,973, to go against expenses to the amount of $39,385,209, during the same period. This will leave a balance of $8,603,764, and this sum the Post Office Department has actually earned during the last six years, over and above all expenses. And yet, in the face of all this, we have a law passed raising letter-postage on all letters that go 3,000 miles or over, from six to ten cents, on the plea that the Department does not support itself!

In addition to this, there is no part of the country, no large city, small town, or back settlement, that is not suffering for mail facilities, which are denied on the plea that there is no money. The very fact that an appropriation is made "on account of government postages," is a tacit acknowledgment of the debt that government owes to the people of the country for mail service. By what rule of financial calculation, or mercantile fairness, a debt of $2,500,000 may be said to be discharged by a payment of seven or eight hundred thousand dollars, is a problem that would perhaps puzzle the ablest head in Wall street.

I feel that it would be an insult to your understanding to elaborate and extend my demonstrations further on this head. If I have not made out my case, if it is not as clear as a demonstration in Euclid, or a problem in the rule of three, that a reduction of thirty-three per cent. could at once be made on

our rates of postage, and then have our Post Office support itself completely, and have an overplus for our contingencies, provided government paid for all the franked matter, and we had uniformity for a basis, and letter-carriers and receiving-houses in our cities—I repeat, if my case is not fairly made out, then I am willing to be set down as one "void of understanding," and without the capacity to appreciate the simplest question of national finance.

I have not the time, nor would you have the patience, to take up the subject of Post Office Money Orders, and some other important branches of the postal service.

There is one outlay, one branch of postal expenses, that of mail transportation by railway, in which, according to contracts formerly made, we have had an expenditure that, if continued, would not only absorb all our postal revenue, but would bankrupt the National Treasury. The sum paid for railroad transportation in 1848, was $584,192, and in 1854, $1,758,610, and with the same rate of progressive increase for fifteen years—to 1870—our annual mail transportation on railroads alone would be no less than $32,524,014, and, with other expenditures, would make an aggregate of postal expenses to the amount of $74,881,198. You need not be told that our postal receipts, cannot by any possibility amount to such a sum within that time.

A condensed view of our postal system, with the revenue and expenditure of each State will show the comparative amount of postage, and the expenses of each locality.

POSTAL STATISTICS OF THE DIFFERENT STATES.

States.	1 Postal Revenue. 1856.	2 Revenue per 1,000 persons.	3 Number of Letters 1852.	4 Number of Letters. 1856.	5 Per cent. Gain.	6 Letters per 1,000. 1852.	7 Letters per 1,000. 1856.	8 Per cent Gain per 1,000.	9 Postal Expenses. 1856.	10 Proportion of Exp. to Rec'ts.	11 Postal Revenue, with Government postage added.	12 Proportion of Exp. to Rec'ts.
Mass.....	$557,659	$492	8 914,085	11,362.071	27	8,563	10,028	17	$385,989	69	$769,290	50
Conn.....	190,924	476	2,944,534	3,889,997	32	7,728	9,700	26	175.181	92	263,880	66
N. York..	1,436,100	411	23,048,731	29.259.943	27	7,154	8,482	17	1,087,816	72	1,981,100	52
California	265,019	791	2,131.187	2,769,354	90	12,895	8,266	*56	268,714	101	365.514	74
R. Island.	62,543	375	953,184	1,274,287	34	6,190	7,630	23	39 544	63	86,277	46
Iowa.....	117,415	350	806,344	2,392.283	196	3,416	7,141	108	158,318	181	161,978	95
N. Hamp.	100,000	308	1,665,602	2,037,459	22	5.205	6,269	21	99,943	100	137,950	72
Michigan.	156,183	307	1,582,347	3 182,164	74	4,212	6 252	48	282,837	149	215,454	108
Vermont.	96.689	297	1,682,819	1,968,980	21	5.184	6,058	18	117,831	122	133 314	89
Wisconsin	149,676	271	1,510,285	3,049 586	102	3,892	5 525	42	170 869	114	206,478	82
Illinois...	333,620	268	3,304 289	6,797,370	106	3,365	5 468	62	553,337	166	460.259	120
Maine....	152,710	245	2,549,861	3,111,403	22	4.271	4,987	17	170,745	112	210,664	81
Penn.....	591,220	232	9,924,837	12,045.863	21	4.154	4 737	14	528,796	89	815,588	64
Ohio.....	451,707	204	7,366,635	9,203,343	25	3.578	4,154	17	670,995	151	628 159	108
N. Jersey	107,738	189	1,715,479	2,195,117	28	3,324	3,852	16	182,336	123	148,624	89
Indiana...	171,410	149	2,590,852	3,492,409	35	2 486	3.037	22	303,972	177	236,482	129
Pac. Terr.	14,046	342	164,566	146,812	74	7,155	3.581	*100	38.175	272	19,376	196
Other Ter.	32,979	162	98,490	671,933	586	821	3,310	305	112,265	340	45,495	247
Total Nor.	$4,987,588	309	73,154,117	98,850,374	38	5,082	6,124	23	5,186,658	104	6,880,377	75
Dist. Col..	43,731	741	732 589	891,000	22	13,565	15,101	11	38,161	87	60,326	63
Maryland.	187,104	292	2,773,797	3,812,166	37	4,607	5,956	29	263.471	141	258,109	102
Louisiana	168,579	273	2,585,006	3,332 854	31	4,651	5,555	20	371,411	227	225 657	165
Delaware.	19,648	202	321,266	400.320	25	3,454	4 127	19	19,477	100	27,108	72
Florida...	20,058	181	381,514	408,674	7	4,016	3,681	*9	105 866	527	27,670	382
Missouri..	141.765	168	2,087,968	2.888 406	42	2 784	3,484	23	287,373	202	195,565	147
Georgia ..	140,070	150	2,873,102	2,858,868	*1	3.137	3,052	*3	326.406	233	193 226	169
Virginia..	218,090	144	3,799,658	4,443,494	12	2,617	2.936	12	413.993	190	300,855	137
Texas....	68,005	186	922.581	1,385,574	50	2,995	2,771	*8	251 533	370	93,812	268
Alabama .	109,225	131	2,169,308	2.225,414	3	2 736	2,665	*2	324,868	297	150,675	216
S. Car....	91.803	130	1.759,060	1,870,449	6	2.588	2,649	2	270.437	294	126,642	214
Kentucky	121,308	111	2 374,455	2.471,601	4	2 335	2,274	*3	224,422	185	167,343	134
Miss	74,444	111	1,558 542	1,516,765	*2	2,474	2,257	*9	248.708	234	102,702	242
Arkansas .	27,832	110	527,743	567,066	7	2.810	2 240	*5	234.177	842	38.394	610
Tennessee.	101,485	93	1,363,684	2,067,716	11	1,804	1 893	4	198,103	195	139,998	141
N. Car....	71,887	78	1,293,277	1,464,668	13	1,458	1.589	10	206.068	287	99,168	208
Total So..	$1,556,303	144	27,185,956	31,709,035	17	2,717	2,985	6	$3,746,313	241	$2,146,919	174
Grand tot.	6,587,622	244	101,072 662	131,450,409	32	4 133	4,875	20	8,971,132	136	9,087,622	99

* Loss per cent.

The first column of figures shows the postal revenue contributed by each State; the "Pacific Territories" being put in one item, and the "other Territories" in another. The number of letters in each State, and the number of letters for each thousand persons, is based on the postal revenue of each State,

together with the population. It is well to mention that the figures giving the numbers of letters for each thousand persons in California and the Territories, in 1852 and 1856, are somewhat conjectural, in consequence of the difficulty of knowing the exact population at those periods in these localities. All the other items may be considered a close approximation to the actual facts. The order of the States is by amount of correspondence *per capita*. The people of Massachusetts write ten letters annually per person, and the people of Indiana three. In Maryland and Louisiana—commercial States—they write from five and a half to six letters to a person, and in North Carolina, one and a half.

The ninth column of the table shows the postal expenses set down to each State. These sums, of course do not show in all cases the exact proportion of postal expenses laid out for the postal service of the State. Still, a good idea of the comparative receipts and expenditures of each State may be formed.

Column ten shows the proportion of receipts that is swallowed up in expenses. In New York, it is 72 per cent.; in New Hampshire, all (100 per cent.); and in Indiana, the expenses are to receipts as 177 to 100; in Florida, 527 to 100; throughout the North, 104 to 100; and in the South 174 to 100. We see the general rule: commercial States, and thickly settled regions have many letters, large receipts, and comparatively light expenses. Columns eleven and twelve show the revenue and proportion of expenses, provided government paid $2,500,000 (the correct sum), for all its franked matter. If we look at the postal business of those States that carry on the great bulk of the foreign commerce, we shall have the following resume:—

STATISTICS OF THE PRINCIPAL COMMERCIAL STATES FOR 1856.

States.	Population.	Foreign Commerce.	Customs Duties.	Postal Expenses.	Postal Revenue.	Number of Letters.	Letters pr. 1,000
Maine	623,862	$4 903 814	$562,824	$170,745	$152 710	3 111,403	4,987
Massachusetts	1,133,123	73,637,744	7,883,808	385,989	557,659	11.362,071	10,028
New York	3 470.059	329 273.954	33,332,220	1,037,316	1,436,100	29,259,943	8,432
Pennsylvania	2,542 960	23.822,617	3,701.962	523,796	591,220	12 045,863	4,737
Ohio	2,215.750	1,508,525	583,518	670,995	451.707	9.208 343	4,154
California	335,000	18,016 913	1,598,915	268,714	265 019	2,769,354	8 266
Maryland	639.580	20,241 805	985,757	263,471	187,104	3.812,166	5,956
Virginia	1,512 593	6,187,762	280,703	413,998	218.090	4,443,494	2,936
South Carolina	705.661	19 265 783	441 186	270 437	91.803	1 870.449	2 649
Georgia	985,090	8 665.928	145.797	326,406	140,070	2,853,868	3 052
Alabama	885.192	24,527.684	171,885	324,868	109,225	2.225,414	2,665
Louisiana	600 887	97,547,472	2,142 904	371,411	163.579	3,332 854	5,555
Missouri	821,216		658,869	287,378	141,765	2,888.406	3,484
Total	16,870,473	$627,599,501	$52,440,348	5,315,514	$4,506,051	89,178,628	5,428
Per cent	61	98	97	59	68	63	
Balance	10.593,839	14.170,328	1,473,200	3,655,618	2,081,571	42,270,781	4.028
Grand total	26,964,312	641.769 829	53,912,548	8,971,132	6,587,622	131,449,409	4 875

The "customs duties" are for 1855, being the latest treasury report—all the rest for 1856. Here we see that those States that have 98 per cent. of the foreign commerce—the gross amount of exports and imports—have but 61 per cent. of the population, while they furnish 68 per cent. of the letters, and have charged against them but 59 per cent. of the postal expenses. If these States that do the great bulk of the business correspondence of the country had all the gaps in their connecting links filled up, by adding to them the postal expenses and receipts of Rhode Island, Connecticut, New Jersey, Delaware, District of Columbia, North Carolina, &c., together with those active and thickly settled States that pay their share of the postal revenue, should we not see that all the "deficiencies" in our postal expenses are required to carry the mail into districts of country like Florida, Texas, Arkansas, Iowa, Nebraska, and Oregon? We see from these official facts and figures where the great bulk of our postal business is done; we know the duty of government to the frontier settlements; and is it not clearly established that the postal business of the commercial and thickly settled States is the most profitable, giving the largest revenue with the

smallest outlay in proportion to the income? Why should some pay a special tax on correspondence to supply the wilderness and the prairie with the mails?

And now I will ask if it is reasonable, just, or right, for the citizens and representatives of the thinly settled and frontier States to accuse the merchants and residents of our large cities, of asking for rates of postage lower than the actual cost of transporting the bulk of their correspondence, so that the correspondence of other sections or the treasury of the United States must be taxed to carry on their business? Is not the contrary the fact? Are not high rates of postage or appropriations for deficiencies for the direct and sole purpose of carrying the mail service to the thinly settled frontier?

The subject of Post Office Improvements has occupied much of my attention for seven or eight years; and not until I resided several years in Great Britain had my attention been called to the vast superiority of the system in that country. In 1854, I made a journey to Europe for no other purpose than to obtain facts and reports on the postal systems of the principal European nations, and I succeeded in collecting much and most satisfactory information, being aided and assisted with the greatest courtesy by all the postal authorities whom I met, as well as by the United States Ministers at the different courts.

Mr. President; the vast interest attached to our postal system by all classes of citizens will, I trust be a sufficient apology for the lengthy paper that I have submitted to the attention of the Society. As a necessary link in our social system, and as a means of extending commerce and advancing science, the Post Office is the most important department of the general government, and the wide and growing interest felt in greatly needed improvements and reforms unite in invoking your powerful aid.

ARTICLE IV.

The Agricultural Features of the Census of the United States for 1850.

By Geo. E. Waring, Jun.

In gleaning from the census its agricultural features, one has cause to regret the want of accuracy and completeness with which it is characterized. This deficiency is more evident in matters appertaining to agriculture than in other branches of industry. Many causes conspire to render this, under our present management, almost inevitable.

Farmers lack system and order in the control of their affairs, and but few of them can tell the exact number of acres planted with any particular crop. Neither do they know the precise amount of that crop when harvested, nor of the seed required for its production. The same is true with regard to nearly every branch of farm economy.

The results obtained by the marshal must be the *opinion* of the farmer, rather than his *certain conviction*, based on the undeniable evidence of weights and measures; and hence we may find many who over-estimate the productions of their farms or the value of their stock; while others, from excess of prudence, fail to attain a standard sufficiently high. Another difficulty arises in the fact that the persons employed in collecting statistics frequently lack the energy and faithfulness necessary to the proper discharge of their duties; and, indeed, in many instances, their remuneration is not sufficient to insure the greatest thoroughness. For instance, the cost of collecting the statistics of Indiana in the year 1853, was but $4000, being but about 2½c. for each dwelling, or less than 1c. for

each ten acres of improved land within the State; and but a small part of the schedule refers to agriculture.

Supposing the census returns to be sufficiently accurate for practical purposes, we find them to contain much that is interesting and instructive.

RELATIVE IMPORTANCE OF AGRICULTURE.

The first fact which attracts the attention of the reviewer of the census, is the importance of agriculture as compared with other industrial arts.

1. The amount of capital actually invested in agriculture, according to the census of 1850, was as follows:

Cash value of Farms	$3,271,575,426
Cash value of Live Stock	544,180,516
Cash value of Implements	151,587,638
Total	$3,967,343,580

The census gives no estimate of the manures.

The amount of capital invested in manufactures, mining, the mechanic arts and fisheries, was $527,299,193, or less than *one-seventh* of that employed in agriculture.

The amount of the commerce, trade, &c., of the United States, during the same year, is estimated at $1,500,000,000, or about *one-third* more than the value of the agricultural products. This estimate, however, is of doubtful accuracy.

2. The number of free males over 15 years of age employed in agricultural labor in 1850, was 2,400,583, or nearly as many as in all other occupations.

The rural population of the country is estimated at 17,393,907, or three fourths of the whole, living almost without exception by the direct productiveness of the land.

The town and village population is estimated at 5,797,969.

At the same time three fourths of the commerce and trade consist in exchanges of agricultural products; consequently three fourths of those employed in these branches of industry are directly dependent on agriculture for their earnings.

Mr. De Bow, (Superintendent of the Census) estimates the capital now represented by agriculture in the United States at five billion dollars, and that represented by all other branches of industry at less than one billion—giving to agriculture *more than five sixths* of the whole.

In making the foregoing estimate, the writer has entirely suppressed his own opinions, and has relied only on the returns of the census, feeling at the same time that these returns often err, and that the errors are not in favor of agriculture.

Let us now examine the *items* of our statistics.

FIRST—LAND AND FARMS.

	Acres.
The supposed area of the territory of the United States in 1850, was	1,466,455,680
The area in use, was	293,560,614
Of this amount, there were of improved land	113,032,614
Unimproved	180,528,000

The proportion of land in use was as follows:

Improved, per cent	7.71
Unimproved, per cent	11.31

The proportion of land in use, is greatest in the Middle States.

The occupied land is divided into 1,449,075 farms and plantations.

The average size of farms is, acres	203
The average value of farms is	$2,258

The average value of occupied land per acre, in various localities, is as follows:

In New England	$20 27
In the Middle States	28 07
In the Southern States	5 34
In the Southwestern States	6 26
In the Northwestern States	11 30
In California and the organized Territories	6 26
In Texas	1 89
In the whole country	11 14

The proportion of improved land to the whole area in these various localities is as follows:

In New England	27.79 per cent.
In the Middle States	35.72 "
In the Southern States	16.07 "
In the Southwestern States	10.17 "
In the Northwestern States	12.90 "
In California and the organized Territories	06 "

The average size of farms in the same districts is as follows:

In New England	109.55 acres.
In the Middle States	121.08 "
In the Southern States	399.00 "
In the South western States	273.57 "
In the North western States	155.41 "
In California and the organized Territories	683.23 "
In Texas	942.47 "

Of the improved land in the United States, there are:

In Pasture	20,000,000 acres.
In Hay	*13,000,000 "

SECOND—LIVE STOCK.

The value of the Live Stock owned in the United States 1850, was estimated at $544,180,516.

The number of animals was as follows:

Neat Cattle	18,378,907
Horses	4,336,719
Mules and Asses	559,331
Sheep	21,723,220
Swine	30,254,213

The value of our Poultry was estimated by Dr. Bennet at $20,000,000.

* This statement is derived from computation and estimate, and not from returns by the Marshals. It must be regarded as only an approximation to the truth.

There is in the States a large number of goats and other animals, not enumerated in the census.

Neat Cattle.—The first importation of neat cattle into the country, was made by Columbus, in 1493. Cattle were brought to Virginia before 1607. The first importation into Massachusetts was in 1624.

The neat cattle enumerated in the census were divided as follows:

Milch Cows	6,385,094
Working Oxen	1,700,744
Calves, Steers, Fat Cattle, &c.	10,293,069

New York, Ohio, Pennsylvania, Georgia, and Virginia had each over one million head of cattle.

Since 1840, New York and Pennsylvania have slightly decreased in their number of cattle, while the other States named have increased.

The total increase in the ten years was 3,407,321 head.

In the fiscal year 1850–51, there were but 1,350 head of cattle exported, being a less number than at any time since 1827–8, and the exports of 1852–3, were still less.

It is estimated* that there are now in the country about 20,000,000 head of cattle, which, at $20 per head, would be worth $400,000,000. It is the opinion of the writer, after an examination of the census returns for various periods, that this estimate, as regards both increase and valuation is too large.

Horses.—Horses were first brought into the United States in 1527, by Gabeza de Vaca, who landed in Florida. This importation was soon lost. De Soto landed horses in Florida in 1539, and they were subsequently imported to various parts of the continent. Columbus brought horses to San Domingo in 1493. Supposing the horses returned in the last census to be worth $60 each, their total valuation would be $260,203,140. In the fiscal year 1836–7 there were exported 5,022 horses,

* See Patent Office Report 1854, part 2, p. 4.

being the largest number in any one year. In 1850–1 there were exported but 1,364 horses. The increase of horses from 1840 to 1850 was probably about 500,000.

Mules and Asses.—Previous to the year 1783, there were but four mules in the country. These had been brought from the West Indies. Soon after that time Gen. Washington became convinced of their value, and made known his views on the subject. He received as presents from the King of Spain and from Gen. La Fayette a few jacks and jennies, and became a successful rearer of mules. Some of his stock were very fine, and at the sale of his effects a team of four sold for $800.

The number of mules returned for 1850 was 559,331, of which number 500,000 were probably mules worth $100 each, or 50,000,000. The value of jacks varies from $25 to $2,500 each.

Sheep.—Sheep were imported into Virginia in 1609, by the "London Company." Their exportation being prohibited, their number had increased in 1648 to 3,000.

There is some uncertainty concerning the importation of the improved breeds of sheep, and there are no means of ascertaining the number of our Merinoes, Saxons, Leicesters, Cottswolds, and other pure breeds. They are disseminated through all parts of the Union. The number of sheep exported in 1850 was 4,357, valued at $18,895, or $4 35 each. The number of sheep in the country in 1850, exclusive of lambs, was 21,723,220, worth about $45,000,000.

Swine.—The hog seems to have been introduced into the present territory of the United States about as follows:—Into Florida, 1538, by Ferdinand de Soto. Into Virginia in 1609, by the London Company. Into Massachusetts Bay in 1605. Into New York, 1629, by the Dutch West India Company.

There were exported in 1850–1, 1,030 hogs. The increase from 1840 to 1850 was about 4,000,000. The total value of this stock in 1850 was estimated at $150,000,000.

Poultry.—Since 1840, there has been no official estimate

of our poultry. At that time the value was fixed at more $12,000,000; and, owing to the enhancement of price in remote districts, and the importation of improved breeds, they are now estimated at $20,000,000.

THIRD—VEGETABLE PRODUCTS.

Corn.—The corn crop is the most important of our vegetable products. The number of bushels of this grain returned in the census of 1850 was 592,071,104, worth at the export prices of that year, $296,035,552.

The value of corn and meal exported in 1849–50, was $4,652,804.

The average crop per acre in 1850 was about twenty-five bushels.

Hay.—The hay crop stands second in moneyed value, and in 1850 amounted to 13,838,642 tons; which, at $12 per ton, equals $166,063,704.

The average crop per acre, as given in our last census, was 1¼ tons.

Wheat.—The crop of wheat given in the census of 1850 amounted to 100,486,915 bushels, worth at least $1 per bushel, rendering it the third crop in pecuniary importance.

The export of wheat, &c., in 1850–51, was as follows:—1,026,725 bushels, valued at $1 per bushel; 2,202,335 barrels of flour, valued at $5 per barrel; 106,399 barrels of ship-bread; 34,815 kegs of ship-bread. The total valuation of these exports was $11,804,349.

Cotton.—Cotton is the fourth crop in importance in the United States; the product reported in the census of 1850 being 987,637,200 lbs., which, at the average price between the years 1845 and 1850 (7.3c. pr. lb.) equaled $72,099,508.

Oats.—According to the last census the fifth crop in monetary importance was oats; being 146,584,179 bushels, worth at the low estimate of 30c. per bushel, $43,975,253.

Among the foregoing five most important crops, we may

make the following comparison, taking the estimated value of the oat crop as the standard or unit:—

The Corn crop compares with the Oat crop as.....	6.73 to 1
The Hay crop compares with the Oat crop as	3.77 to 1
The Wheat crop compares with the Oat crop as	2.28 to 1
The Cotton crop compares with the Oat crop as	1.64 to 1

Potatoes.—The crop consisted of 104,066,044 bushels, including 38,268,148 bushels of sweet potatoes; amounting at 30c. per bushel, to $31,219,813.

Sugar and Molasses.—These items comprise 247,577,000 lbs. of cane sugar, 34,253,436 lbs. of maple sugar, and 12,700,991 gallons of molasses; worth in all $20,720,143, estimating the sugar at 6c. per lb., and the molasses at 30c. per gallon.

Tobacco.—The eighth crop in value was tobacco, being 199,752,655 lbs.; worth, at 10 cents per pound, $19,975,265.

Rye.—Rye is next in order, the crop of 1850 being 14,188,813 bushels; worth, at 75 cents, $10,641,610.

Hemp, Flax, and Flaxseed.—These articles constituted the eleventh item in value, according to the census being as follows:—

Hemp, tons,	34,871	at	$100 00	$3,487,100
Flax, pounds,	7,709,676	at	0 10	770,968
Flaxseed, bushels,	562,312	at	1 25	702,890
		Total.		$4,960,958

Many tons of flax, raised for the seed alone, were wasted on account of the expense of pulling. The recent improvements in flax machinery, may, in time, render available the straw which is now thus wasted.

Barley.—The barley crop, as returned in 1850, was 5,167,015 bushels; worth, at 75 cents per bushel, $3,876,762.

Buckwheat.—The amount of this grain raised was 8,956,912 bushels; worth, at 35 cents per bushel, $3,134,919.

Various other crops were returned in the census of 1850, their amount being as follows:—

Peas and Beans, bushels,	9,219,901
Market garden products, valued at	$5,280,030
Orchard products, valued at	$7,723,186
Clover Seed, bush.	468,978
Grass Seed, bush,	416,831
Wine, gals.	221,249

FOURTH—ANIMAL PRODUCTS.

The animals slaughtered during the year for which the last census was taken, were valued at $111,703,142.

Milk sold,	No estimate.
Butter sold, lbs.	313,345,306
Cheese sold, lbs.	105,535,893
Beeswax and honey sold, lbs.	14,853,790
Wool sold, lbs.	52,516,959
Silk Cocoons sold, lbs.	10,843
Eggs may be estimated at	dozen 200,000,000

In addition to these we may name, as articles largely produced, tallow, pork, bacon, hams, and hides.

The same may be said of broom corn, osier willow, millet, rape, pumpkins, onions, indigo, &c.; all of which are raised in considerable quantities.

We will now name, in the order of their importance, the five States possessing and producing the largest amounts of various products:—

NEAT CATTLE.

New York,	1,877,639
Ohio,	1,358,947
Pennsylvania,	1,153,946
Georgia,	1,097,528
Virginia,	1,076,269

HORSES, MULES, AND ASSES.

New York,	447,977
Ohio,	466,820
Kentucky,	381,291
Pennsylvania,	352,657
Indiana,	320,898

SHEEP.

Ohio,	3,942,929
New York,	3,453,241
Pennsylvania,	1,822,357
Virginia,	1,310,004
Indiana,	1,122,493

SWINE.

Tennessee,	3,104,800
Kentucky,	2,891,163
Indiana,	2,263,776
Georgia,	1,964,770
Ohio,	1,168,617

VALUE OF LIVE STOCK.

New York,	$73,570,499
Virginia,	33,656,659
Tennessee,	29,978,016
Kentucky,	29,661,436
Georgia,	25,728,416

INDIAN CORN (PRODUCED).

Ohio, bush.	59,078,695
Kentucky, bush.	58,672,591
Illinois, bush.	57,649,984
Indiana, bush.	52,964,368
Tennessee, bush.	52,276,223

HAY (PRODUCED).

New York, tons,	3,728,797
Pennsylvania, tons,	1,842,970
Ohio, tons,	1,022,047
Vermont, tons,	836,739
Maine, tons,	691,358

WHEAT (PRODUCED).

Pennsylvania, bush.	15,367,691
Ohio, bush.	14,498,351
New York, bush.	13,121,498
Virginia, bush.	11,212,616
Illinois, bush.	9,414,575

COTTON (IN 1840 PRODUCED).

Mississippi, lbs.	193,411,577
Georgia, lbs.	163,392,396
Louisiana, lbs.	152,555,368
Alabama, lbs.	117,138,823
South Carolina, lbs.	61,710,274

OATS (IN 1850 PRODUCED).

New York, bush.	26,552,814
Pennsylvania, bush.	21,538,156
Ohio, bush.	13,472,742
Virginia, bush.	10,179,144
Illinois, bush.	10,087,241

The writer sincerely regrets that the limits of this report are not sufficiently extended to enable him to consider at length that branch of agricultural statistics which is emphatically of the greatest national importance, but which has never yet found its way into the census returns, that is; *The amount of inherent fertilizing matter removed from the soil by the production and ordinary use of crops.*

No *soil is inexhaustible.* The fertility of the earth's surface depends on the presence in the soil of certain materials which are employed in the growth or formation of plants. These materials do not act externally. They enter the structure of the plant, and become incorporated with its parts, thus forever to remain until liberated by the decomposition of its tissues.

Their subsequent destination must, of course, depend on the circumstances under which they are set free. For instance, if the constituents of a tree or other plant be disorganized by natural decay on the soil, they find their way into the atmosphere and into the earth—the former receiving those parts which it had originally contributed, and the latter also receiving the amount which had been supplied from its integrants; but if this tree be decomposed by fire in the city, and if the ashes be disposed of as is usual in such cases, the atmosphere is still compensated for its previous supply, but the soil, cheated of its dues, loses permanently its quota of mineral constituents. The same is true in all ordinary consumption of vegetable products, by fire, decay, or digestion.

In order that we may more clearly understand this subject, let us consider the amount of the various kinds of the mineral matter abstracted from the soil by different crops.

Ten bushels of corn contain 9 lbs. of mineral matter, among which we find 2.78 lbs. of potash, and 4.52 lbs. of phosphoric acid.

Ten bushels of wheat contain 12 lbs. of mineral matter, consisting, in part of 2.86 lbs. of potash, and 6.01 lbs. of phosphoric acid.

All crops contain nine or ten kinds of mineral matter, in different proportions.

For purposes of illustration, we will estimate the amounts of potash and phosphoric acid contained in the corn and wheat crops of 1850. They are as follows:—

Potash	Wheat	28,739,280	lbs.
	Corn	162,595,766	lbs.
	Total	191,335,046	lbs.
Phosphoric Acid	Wheat	60,392,055	lbs.
	Corn	267,615,807	lbs.
	Total	328,007,862	lbs.

Estimating the potash at six cents per lb., and the phosphoric acid at three cents per lb. (by no means too much), we find the value of these ingredients of the corn and wheat crops of 1850 to be $19,520,328.

Let it be remembered that these are but two ingredients of the ashes of but two crops, and that the estimates are made at low figures. How large a portion of this mineral matter is returned to the soil, it is impossible to say.

The wastes of fertilizing matter in all of our cities and towns are enormous. The population of New York and its suburbs is probably not less than 750,000.

Could the fertilizing matter wasted, in various ways, by this number of persons, be applied to the soil, it would be worth at least $15,066 per diem, or $5,475,000 per annum. This is at the low estimate of 2c. per diem for each person, without considering the immense number of horses and other animals fed in these cities.

The amount of animal matter contained in the food of human beings, may be considered as entirely lost to the soil—but a comparatively small portion of it ever finding its way back to the field. In the Agricultural Report of the Patent Office, for 1849-'50, Dr. Lee (who is excellent authority on such subjects) says,—"Several gentlemen at the South have stated, that to supply slaves, on plantations, with bread, including old and young, requires from twelve to thirteen bushels each year." Taking thirteen bushels as the average consumption by the 22,000,000 people in the United States, of breadstuffs, and the aggregate is 286,000,000 bushels per annum. Without deeming it necessary to go into an explanation to prove why it is so, the fact may safely be assumed that the elements of fertility contained in all the meat, milk, butter, cheese, potatoes, fruit, and garden vegetables consumed by the American people, exceed by ten per cent. the amount which exists in the grain consumed. It is sufficient for my purpose, however, to place the estimate below 10 per cent., and call the fertilizing elements, contained in these articles of human food equal to 314,000,000 bushels of corn. By adding together the sums above-named, we have the ashes of 600,000,000 bushels of corn, in effect taken from American soils, of which next to none is ever returned.

According to the estimate of the same gentleman, the aggregate annual loss of fertilizing matter equals the amount necessary to form the ashes of 1,000,000,000 bushels of corn, or about double our present crop. This estimate is made without considering our large exportations of breadstuffs, and the sale of ashes. It further allows two thirds of the manures of all domestic animals to be returned to the soil. In 1850, the value of animals slaughtered was $111,703,142; this would equal 3,723,438 steers at $30 per head. The bones alone of these animals would be worth for manurial purposes about $5,500,000.

In the opinion of the writer it would be improper to estimate the total annual wastes of the country at less than

an amount equal to the mineral constituents of 1,500,000,000 bushels of corn.

To suppose that this state of things can continue, and we as a nation remain prosperous, is simply ridiculous. We have as yet much virgin soil, and it will be long ere we reap the reward of our present improvidence. It is merely a question of time, and time will solve the problem in a most unmistakable manner. What with our earth butchery and prodigality, we are each year losing the intrinsic essence of our vitality.

Our country has not yet grown feeble from this loss of its life-blood; but the hour is fixed when, if our present system continue, the last throb of the nation's heart shall have ceased, and when America, Greece, and Rome shall stand together among the ruins of the past.

The question of economy should be, not how much do we annually produce, but how much of our annual productions is saved to the soil. Labor employed in robbing the earth of its capital stock of fertilizing matter, is worse than labor thrown away. In the latter case it is a loss to the present generation; in the former it becomes an inheritance of poverty for our successors. Man is but a tenant of the soil, and he is guilty of a crime when he reduces its value for other tenants who are to come after him.

The first step towards improvement is through the medium of *Agricultural Statistics*. Let the next census state the amount and value of mineral matter removed from the soil, and the proportion of the crops that is retained for consumption on the farm or plantation, fairly assuming that the remainder leaves the soil, and is essentially lost. Let this amount, in dollars and cents, be placed before the eyes of every voter in the land, and we may then hope for earnest and efficient action, such as is required in the much-needed amendment of our system. This course will not be attended with great difficulty. By the assistance of analytical tables, already prepared, the labor may be done in the Census Office, as easily as any other branch of its duties.

ARTICLE V.

The Japanese Gulf Stream,

By Lieut. Bent, U. S. N.

Gentlemen of the Society,
and Ladies and Gentlemen:—

After the able, lucid, and highly scientific address upon the Gulf Stream, delivered before you on Thursday last by Prof. Bache, it is with extreme diffidence that I appear upon a similar field of discussion; but in compliance with the flattering solicitation of this Society, I shall endeavor to lay before you, in a brief manner, such results, derived from the hydrographic and meteorologic data collected by the late expedition to Japan—under the command of Commodore M. C. Perry—as will show that there is also in the Pacific a "river in the ocean" flowing to the northward and eastward along the coast of Asia, corresponding in every essential point with the Gulf Stream of the Atlantic.

To a proper understanding, however, of the materials from which these results were obtained, I may premise by saying that a record was kept on board of each of the eleven vessels composing the squadron, of the barometer and air and water thermometers, every alternate hour during the cruise.

These, together with the abstracts from the logs of the winds, currents, and daily positions of the ships when under way, as obtained by observation and dead reckoning, were furnished in the form of monthly reports from the sailing masters, with remarks upon any meteorological or professional incident that may have come under their immediate observation.

Scattered over the ocean and seas, extending from the south coast of China to the northeast extremity of Japan, during a period of eighteen months of stirring activity, our squadron traversed that whole region in every direction; and these reports written with intelligence, and their accompanying tables compiled with care, furnish a full and valuable collection of consecutive observations, which were placed in my hands by Commodore Perry for elimination and arrangement.

I at first plotted all these observations on a skeleton chart; but found that no satisfactory conclusion could be adduced from them in such a form, owing to the confusion produced by the unavoidable discrepancies arising from careless steerage or local deviation of the compasses, irregular atmospheric pressure, and influences of shifting winds and neighboring land; and that so far as the defining of the limits and general direction of great oceanic currents were concerned, the thermometer was the only sure and safe guide.

Taking an idea, therefore, from Captain Wilkes' meteorological report of the Exploring Expedition, I made a series of diagrams of the various passages of the ships between the coasts of China, Japan, the Loo-Choo, Bonin, and Sandwich Islands, so as to exhibit the tracks, daily winds, currents, mean diurnal atmospheric pressure, and temperature of the air and water, and to convey to the mind by a simple inspection the most satisfactory results in regard to the important oceanic stream in that region, and which, I am in hopes, may prove of some interest to this learned Society.

These diagrams show an increased temperature of both the air and the water the moment this stream is entered,—but a predominant thermal change in the water, which almost invariably continues superior in temperature to that of the air until leaving the stream again.

On the northwestern edge of the stream the transitions are sudden and extreme, varying according to the latitude, from 10 deg. to 20 deg. On the southeastern side the change is less abrupt; and from the gradual approximation of the thermal

ranges of the air and water, its outline is rendered less distinct and definite.

Along the borders of the stream, where it chafes against the torpid waters of the ocean and counter-currents, as also in its midst, where whirls and eddies are produced by islands and the inequalities in its bed, strong tide-rips are constantly encountered, which often resemble heavy breakers on shoals and reefs, and become finger boards, as it were, to warn the seaman of the otherwise unseen influence which may be bearing his ship far from her intended track, and perchance upon some of the many fearful dangers which sprinkle that region of the sea.

The existence of a northeast current on the coast of Japan was noticed by Cook, Kruzenstern, and other explorers, and has, of course, not escaped the attention of more recent intelligent navigators; but I believe no systematic series of observations upon it have hitherto been made.

The Japanese are well aware of its existence, and have given it the name of "Kuro-Siwo," or Black Stream, which is undoubtedly derived from the deep blue color of its water, when compared with that of the adjacent ocean.

The fountain from which this stream springs is the great equatorial current of the Pacific, which in magnitude is in proportion to the vast extent of that ocean, when compared with the Atlantic.

Extending from the tropic of Cancer, on the north, to Capricorn—in all probability—on the south, it has a width of near three thousand miles; and with a velocity of from twenty to sixty miles per day, it sweeps to the westward in uninterrupted grandeur around three-eighths of the circumference of the globe, until diverted by the continent of Asia, and split into innumerable streams by the Polynesian Islands, it spreads the genial influence of its warmth over regions of the earth some of which—now teeming in prolific abundance—would otherwise be but barren wastes.

One of the most remarkable of these off-shoots is the Kuro-

Siwo, or Japan Stream, which, separated from the parent current by the Bashee Islands and south end of Formosa, in lat. 22 deg. north, long. 122 deg. east, is deflected to the northward along the east coast of Formosa, where its strength and character are as decidedly marked as those of the Gulf Stream on the coast of Florida. This northwardly course continues to the parallel of 26 deg. north; when it bears off to the northward and eastward, washing the whole southeast coast of Japan as far as the Straits of Sangar, and increasing in strength as it advances, until reaching the chain of islands to the southward of the Gulf of Yedo, where its maximum velocity, as shown by our observations, is 30 miles per day.

Its average strength from the south end of Formosa to the Straits of Sangar is found to be from 35 to 40 miles per twenty-four hours at all seasons that we traversed it.

Near its origin the Kuro-Siwo, like the Gulf Stream, is contracted, and is usually confined between Formosa and the Majico-Sima Islands, with a width of one hundred miles. But to the northward of this group it rapidly expands on its southern limit, and reaches the Loo-Choo and Bonin Islands, giving it a width to the northward of the latter of about five hundred miles.

To the eastward of the meridian of 143 deg. east, in latitude 40 deg. north, the stream takes a more easterly direction, allowing a cold current to intervene between it and the southern coast of Yesso, where the thermal change in the water is from 16 deg. to 20 deg.; but from the harrassing prevalence of fogs during our limited stay in that vicinity, it was impossible to make such observations or experiments as to prove conclusively the predominant direction of this cold current through the Straits of Sangar, particularly as the tide ebbs and flows through them with great rapidity. Yet, from what we have, I am inclined to believe that it is a current from the Arctic Ocean running counter to the Kuro-Siwo, and which passes to the westward through the Straits of Sangar, down through the Japan Sea, between Corea and the Japanese Islands, and feeds the hyperborean current on the east coast of

China, which flows to the southward through the Formosa Channel into the China Sea. For to the westward of a line connecting the north end of Formosa and the southwestern extremity of Japan, there is no flow of tropical waters to the northward, but on the contrary a cold counter-current filling the space between the Kuro-Siwo and the coast of China, as is distinctly shown by our observations. As far as this cold water extends off the coast, the soundings are regular, and increase gradually in depth; but simultaneously with the increase of temperature in the water, the plummet falls into a trough similar to the bed of the Gulf Stream as ascertained by the United States Coast Survey.

The surface of this counter-current is no doubt influenced in some measure by the southwest monsoon, and during that season of the year a portion of it is forced to mingle its waters with the Kuro-Siwo, between Formosa and Japan. But so well is its existence known to vessels trading on the coast of China, that they rarely, if ever, attempt to beat to the northward through the Formosa Channel, but almost invariably make the passage to the eastward of Formosa during the prevalence of adverse winds, though those winds may be stronger there than in the Formosa Channel.

Of the power of these two currents I can speak from personal experience, in addition to the facts disclosed by the observations made by the Japan expedition; for in the winter of 1848, when attached to the sloop of war Preble, and bound from Hong Kong to Japan, we struggled for three days, after leaving port, against this southwesterly current, without making a single mile on our course to the eastward, and were compelled to resort to the expedient of working along close in shore, and anchoring whenever the tide was combined with the current against us. After reaching the mouth of the channel in this way, we stretched across, doubling the south end of Formosa, and fell immediately into the Kuro-Siwo; when encountering a severe gale of wind from the northward and eastward, we were drifted, under storm sails, ninety-two miles dead to windward in less than three days.

In addition to the resemblance in general character between the Gulf Stream and Kuro-Siwo, there are other analogies which I shall presently mention. But in the first place, I will call your attention to the chart upon which they are traced, to show the striking coincidence in the recurvation, not only of these oceanic streams, but also to the general coincidence in their recurvation with that of the storms of the northern hemisphere. Mr. Redfield is of the opinion that the recurvation of storms between the parallels of 20 and 30 degrees north and south latitude in all parts of the world, as shown by observation, is but partially dependent upon the influence of land, and is "to be ascribed mainly to the mechanical gravitation of the atmospheric strata, as connected with the rotative and orbital movements of the different parts of the earth's surface."*

In the American Coast Pilot, edition of 1837, pp. 666, 667, Mr. Redfield furthermore says,—"The Gulf Stream, from Florida to Newfoundland, is for the most part imbeded or stratified upon a current which is setting in the opposite direction, in its progress from the Polar regions. By its action, the great stream of drift ice from the Polar Basin is brought within the dissolving influence of the Gulf Stream; and the Grand Bank itself perhaps owes its origin to the deposits which have resulted from this process during a long course of ages. The icebergs being carried southward by the deeper Polar current, their rapid destruction is here effected by the tepid water of the Gulf Stream. These two streams of current, like other currents both atmospheric and aqueous, pursue each its determinate course—the Gulf Stream being thrown eastward by the greater rotative velocity which is acquired in latitudes nearest the equator, and the Polar current being thrown westward, along the shores and soundings of the American continent and its contiguous ocean depths, by the tardy rotation which it derived in higher latitudes.

* Naval Magazine, 1836, p. 318.

Were the influence of winds wholly unfelt upon the ocean, it is probable that the same system would still be maintained in all its essential features by the mechanical influence of the earth's rotation, combined with an unstable state of equilibrium."

And Lieut. M. F. Maury, in a paper on the Gulf Stream and currents of the sea, read before the National Institute, April 2, 1844, says,—"A geodetic examination as to the course of the Gulf Stream does not render it by any means certain that it is turned aside by the Grand Banks of Newfoundland at all, but that in its route from the coasts of Georgia as far towards the shores of Europe as its path has been distinctly ascertained, it describes the arc of a great circle, as nearly as may be. Following the line of direction given to it after clearing the Straits of Florida, its course would be nearly on a great circle passing through the poles of the earth. That it should be turned from this, and forced along one inclining more to the east, requires after it leaves the Straits the pressure of a new force to give it this eastward tendency; and have we not precisely such a force in the rate at which different parallels perform their daily rounds about their axis? In consequence of this the Stream, when it first enters the Atlantic from the Gulf, is carried with the earth around its axis at the rate of two miles and a half a minute faster towards the east than it is when it sweeps by the Grand Banks of Newfoundland.

"That this explanation, as to its eastward tendency should hold good, a current setting from the north towards the south, should have a westward tendency; accordingly, and in obedience to the propelling power derived from the rate at which different parallels are whirled around in diurnal motion, we find the current from the north which meets the Gulf Stream on the Grand Banks, taking a southwesterly direction as already described. It runs down to the Tropics by the side of the Gulf Stream, and stretches as far to the west as our shores will allow.

That this theory of rotative influence, may or may not be correct, it is not my province to discuss; but I was forcibly struck with these coincidences of recurvation, when the tracks of the Gulf Stream and Kuro-Siwo, together with the paths of hurricanes, were traced upon the same chart; and I have made these quotations to show what hypotheses are entertained by some of the eminent men who have given much attention and study to the subject; and from a conviction that they are in some measure at least sustained by the results of our observations upon the Kuro-Siwo. For, notwithstanding the configuration of the eastern shores of the continents of America and Asia is undoubtedly the original cause of the deflection to the northward of the whole of the equatorial current of the Atlantic, by the Gulf Stream, and of a portion of that of the Pacific by the Kuro-Siwo, or Japan Stream,—yet were no influences, such as Mr. Redfield and Lieut. Maury refer to, operating upon these Streams, would not their natural inclination from the inertia of their westward flow be to hug the coasts, and wash their whole length to the Arctic sea, or until that inertia was overcome by their friction against the continents? Yet this is not the case in either instance; for it has been well established by Mr. Bache, in his last address, that a counter-current, flowing to the southward and westward, intervenes between the Gulf Stream and the coast of the United States, as far as the peninsula of Florida; and, as I have before stated, as far as our observations extend they prove conclusively that there is a very important counter-current intervening between the Kuro-Siwo and the main coast of Asia.

Another resemblance between the Gulf Stream and the Kuro-Siwo is to be found in the strata of cold water lying in the longitudinal direction of these Streams. Those of the former were determined by observations made by the Coast Survey, and are traced upon the diagram accompanying the annual report of Prof. Bache for 1854, from which the present delineation has been copied. I have represented those of the latter as determined by the thermometric observations taken

by the Japan expedition, from which also, in fact, I have traced the whole outline of the Kuro-Siwo, from its origin about the south end of Formosa to the Straits of Sangar.

I am not precisely aware of what the thermal change is, in passing into, or from, these cold strata in the Gulf Stream, but those in the Kuro-Siwo were indicated by a depression of only a few degrees in the water thermometer, and therefore should more properly be termed cool strata as compared with the rest of the stream; for in all instances these strata maintain a superior temperature to the atmosphere above them; and if the hyperborean current is, as I have supposed, entirely separated from the Kuro-Siwo by its passage through the Straits of Sangar, to the westward of the Japan Islands, I am inclined to think that there is no counter-current underlying the Kuro-Siwo, as is the case with the Gulf Stream. This, however, can only be determined by experiments with the deep sea thermometer, and the usual apparatus for determining submarine currents, none of which were made by the expedition; as its special object was of primary importance, and all other subjects within the field of our observations were necessarily of subordinate consideration, and were obliged to be made as opportunity and the ordinary facilities of our situation would permit. Lieut. M. F. Maury says that "the maximum temperature of the Gulf Stream is 86 deg., or about 9 deg. above the ocean temperature due to the latitude." This maximum temperature coincides with that of the Kuro-Siwo, as shown by the daily means of our observations; but the difference between the temperature of the Kuro-Siwo and the "ocean temperature due to the latitude," is, by the same observations, shown to be greater, amounting on an average to about 12 deg.

There is a floating seaweed found in the Kuro-Siwo similar in appearance to the *fucus natans* of the Gulf Stream; but the specimens collected by the expedition were unfortunately lost before being submitted to botanists for examination, and it is therefore yet undetermined whether they are identical or not.

Lieutenant William L. Maury, kinsman to the distinguished Superintendent of the Naval Observatory, and the officer who conducted most of our surveys on the coast of Japan, found sprigs of coral whilst sounding off Simoda, in lat. 35 deg. North.

The influence of the Kuro-Siwo upon the climates of Japan and the west coast of North America is, as might be expected, as striking as that of the Gulf Stream on the coasts bordering the North Atlantic. From the insular position of Japan, with the intervening sea between it and the continent of Asia, it has a more equable climate than we enjoy in the United States; and since the counter-current of the Kuro-Siwo does not make its appearance on the eastern shores of the islands south of the Straits of Sangar, and as these islands, in their geographical position, have a more eastwardly direction than our coast, the Kuro-Siwo, unlike the Gulf Stream, sweeps close along this shore, giving a milder climate to that portion of the empire than is enjoyed in corresponding latitudes in the United States.

The softening influence of the Kuro-Siwo is felt on the coasts of Oregon and California, but in a less degree, perhaps, than that of the Gulf Stream on the coasts of Europe, owing to the greater width of the Pacific ocean over the Atlantic.

Still, the winters are so mild in Puget's Sound, in latitude 48 deg. north, that snow rarely falls there, and the inhabitants are never enabled to fill their ice houses for the summer; and vessels trading to Petropaulowski and the coast of Kamtshatka, when becoming unwieldy from accumulation of ice on their hulls and rigging, run over to a higher latitude on the American coast and thaw out, in the same manner that vessels frozen up on our own coast, retreat again into the Gulf Stream until favored by an easterly wind.

And in the last annual address of the distinguished President of this Society, the Rev. Dr. Hawks, when speaking of the routes for a railroad to connect the Atlantic States with the Pacific coast, cites the remarks of Mr. Johnson and other

eminent surveyors, to show that the precipitation of moisture to the westward of the Rocky Mountains, in Oregon Territory, is, with rare exceptions, in the form of rain throughout the year; and as the prevailing winds on that coast are from the westward, they are unquestionably ameliorated by the warm waters of the Kuro-Siwo, which impinging upon the Aleutian Islands are thence thrown against the shores of Oregon and California, and form the southerly current on those coasts, to again fall into the great equatorial current of the Pacific.

The whole of the Kuro-Siwo is not, however, obstructed by the Aleutian Islands; for experience shows that there is a current flowing to the northward through Behring's Straits, which is no doubt derived from this stream. This is, perhaps, underlaid by an Arctic current flowing to the southward, which, rising to the surface after passing the narrow defile of the Straits, supplies the counter-current to the Kuro-Siwo before spoken of.

The same atmospheric meteors of revolving storms, or cyclones, prevail on the coasts of China and Japan, as those that have been rendered so painfully familiar to us by their devastations among the West India Islands, and along our Atlantic coast.

In the passage of the United States steam-frigate Mississippi from Simoda, Japan, to the Sandwich Islands, in October, 1854, the thermometer manifested a cold aqueous space between the meridians of 155 deg. east and 170 deg. west, and the parallels of 30 deg. and 35 deg. north, which bears a general correspondence in the Pacific ocean to the position of the Sargassa sea in the Atlantic.

ARTICLE VI.

The Common School System of the State of New York.

By S. S. Randall.

The Common School System of the State of New York, is justly regarded by every intelligent and reflecting mind, as the most important of all those institutions which the wisdom and the benevolence of its statesmen and philanthropists have transmitted to us. For, in the absence of knowledge, in the absence of that education which develops, directs, and cultivates the faculties of the human mind, training them to usefulness, to power, and to the accomplishment of great results, of what avail in a country like ours, where every mind may be brought to bear with equal force, for good or for evil, upon every public act, are the wisest and soundest laws, the noblest institutions, the proudest works of art, the noblest and highest triumphs of genius? If we have been enabled in our successive constitutions of government, to keep in advance of other states and communities, if our statute-book affords on every page, indications of a rapidly progressive civilization, if our magnificent public works, the wonder and astonishment of the age, are vindicating year by year the wisdom and the statesmanship which conceived and executed them, and if our numerous and well endowed charities, taking cognizance of and extending relief to every species of physical and mental disease, our thousands of churches, our universities, colleges and academies, our extended and all pervading popular literature, are steadily carrying us on, with rapid strides, to intellectual and moral no less than material greatness,—we are

beyond question indebted for all this, under Providence, primarily to the influence of those ten thousand—now numbering nearly twelve thousand—primary schools, which for nearly half a century past have been scattered over every section of our State. Go where you will, from one extremity to the other of our great commonwealth—comprising, exclusively of the waters of the great Lakes, a territorial area of 45,658 square miles,—penetrate its interior in every direction, ascend its most rugged hills and mountains, and descend into its most obscure and secluded declivities; you cannot penetrate a league in any direction, without encountering the district school, sometimes indeed bleak, desolate, rugged, and uninviting, but often gleaming like an oasis in the desert, surrounded by ample play-grounds, and embosomed in shrubbery and flowers. There may be found nineteen twentieths of all the children residing in the district, of a suitable age to attend school: thither they are sent at four years of age, and there they remain from four to six and eight months of every year, until they reach the age of ten or twelve; when, perhaps, a large majority of them are transferred to some mechanical occupation or pursuit which is to constitute their future livelihood, and the residue drafted off to some higher literary institution, as a preparation for a future professional career. In these 12,000 districts pervading and inter-penetrating every section of the State, averaging somewhat less than four square miles each, nine hundred thousand children are annually laying the foundations of future character and attainment; 15,000 teachers, half of them male and half female, are constantly employed in communicating to these children the elements of knowledge; 60,000 officers are gratuitously rendering their services in supervising, directing, and administering the affairs of these little principalities; and a million and a half of well-selected books, averaging 125 to each district, are placed within the reach of every inhabitant.

These Schools are open and free to every resident of the

district between the ages of four and twenty-one. The funds from which they are supported, are derived from the following sources:—

1. *The Common-School Fund.*—This consists of the proceeds of the sales of land owned by the State, and the interest on loans made from the fund by authority of the legislature, and on the investment of a portion of it in stocks of various descriptions. The capital of this fund is required, by the constitution, to be annually augmented by the appropriation of $25,000 from the revenue of the fund next to be considered.

2. *The United States Deposit Fund.*—The share to which the State was entitled, of the surplus revenue of the United States Government distributed in 1838 among the several States, and deposited with them for safe-keeping, was set apart, first by the legislature and afterwards by constitutional provision, to the support of Common Schools. Fifty-five thousand dollars of the revenue annually accruing from this source were set apart for the purchase of books for district libraries and for school apparatus, and the residue for the payment of teachers' wages.

3. *A State Tax* of three fourths of a mill upon the dollar, assessed upon all the real and personal property of the State, is required to be annually levied and paid over to the order of the State Superintendent of Public Instruction. This amount, together with the revenues accruing from the Common-School and United States Deposit Funds, is annually apportioned by that officer among the several counties and towns of the State, according to the population of each, as ascertained by the last preceding census; and the share of each county is remitted to the county treasurer, who pays over the share of each town to the town supervisor; whose duty it then becomes to apportion the amount received by him, among the several school districts of his town, according to the number of children residing in each, between the ages of four and twenty-one years.

The unproductive capital of the Common-School Fund

consists of about 400,000 acres of land owned by the State, chiefly in the northern section of the State, the value of which may be estimated in round numbers at $200,000.

The productive capital of the fund is at this time about	$2,400,000
The capital of that portion of the United States Deposit Fund, the interest of which is annually appropriated to the support of Common Schools, is	2,750,000
To which may be added a sum that will annually produce an income of $25,000, reserved by the constitution to be added from the income of the last-named fund to the capital of the School Fund, ...	416,666
Making an aggregate of	$5,566,666

The annual interest on this sum, at 6 per cent. is $334,000; of which $300,000 is annually appropriated and paid over for the support of schools, including $55,000 for the purchase of books for district libraries, and for school apparatus generally.

Adding to this amount the sum required to be raised, as above stated, on the real and personal property of the State, we shall have the sum of about $1,400,000 as the aggregate sum now annually apportioned by the state superintendent among the several school districts of the State; of which about $1,345,000 is applicable exclusively to the payment of teachers' wages, and the remaining $55,000 to the purchase of books and school apparatus. One third of this aggregate amount is required by law to be equally divided among the several districts, and the remaining two thirds to be distributed among the several towns and counties, on the basis of population.

In addition to this, the inhabitants of each town, in annual town meeting assembled, are *authorized*, if they deem it expedient, to raise by tax an additional amount equal to their share of the State fund, to be appropriated to the same purposes; and many of the towns are in possession of local funds applicable to this object, derived from the sale of lands originally set apart by the State, in each township, for this pur-

pose. These local funds amount in the aggregate to about $20,000.

In the several cities, and in many of the large villages and towns of the State, special and local provisions exist, by virtue of which more full and ample provisions are secured for the education and instruction of youth than were furnished by the general law. The city of New York, for example, after contributing upwards of $240,000 as her share of the State tax, expends annually over a million of dollars in the support and maintenance of her magnificent system of public instruction. Many of the other cities and large towns pursue the same liberal and enlightened policy; each striving to be foremost, according to its ability, in its manifestations of regard for the interests of popular education.

In the rural districts generally throughout the State, the share of public money apportioned by the Superintendent, in accordance with law, even when aided by the income of local funds appropriated to this object, is insufficient to meet the expense of teachers' wages, during the ordinary period in which the schools are kept open. This deficiency is supplied by a rate-bill, made out by the trustees at the close of each term, against all those sending children to the school, according to the number of children and of days sent by each,—after exempting indigent inhabitants. About $500,000 are in this way annually contributed by the patrons of the several schools. This amount, added to the sum contributed from the public funds, gives an annual expenditure of nearly two million dollars for the payment of teachers' wages only. There is annually collected also by district taxes, voted by the inhabitants at their annual and special school meetings, an average amount of half a million more, for the purchase of school-house sites, the building, hiring, repairing, and insuring school-houses, the purchase of furniture, fuel, apparatus, &c., and for other incidental objects connected with the wants of the school.

The affairs of each school district are entrusted to the

general charge and supervision of three Trustees, one of whom is annually elected by the inhabitants of the district, at their annual meeting, and who hold their offices respectively for the term of three years. A District Clerk, Collector, and Librarian, are also annually chosen. The trustees are invested with the care and custody of the school-house and other property of the district; they employ the teacher, and fix his compensation, giving him, at the expiration of each term, an order on the town supervisor for that portion of the public money applicable to the term, and collecting the residue of his wages by rate-bill; they purchase books for the district library, and necessary apparatus for the use of the school; and make an annual report of their expenditures, and of the condition of the school generally, to the District Superintendent. This officer is biennially elected in the several Assembly districts, holds his office for two years, examines and licenses teachers, visits and inspects the schools, and reports annually to the state superintendent. The inhabitants of each district, in annual or special meeting assembled, after electing officers, vote all necessary taxes for district purposes, including the building and repair of the school-house, the purchase of sites, the supply of fuel, &c., determine the amount of public money to be appropriated to each term of the school, and transact such other business as the interest and welfare of the district may seem to require.

The State Superintendent of Public Instruction presides over, directs, guides, and stimulates, the workings of the entire system; receives reports from time to time from the various officers charged with its local administration, corresponds daily with such of the inhabitants, trustees, teachers, and other officers as desire information, counsel, or direction; is the final umpire on appeal of all controversies growing out of the system; and reports annually to the legislature on all matters coming within the range of his supervision.

At the Capital, the State Normal School, under the charge of an Executive Committee of five members, of which the

State Superintendent is *ex-officio* chairman, a Principal, and several Professors, annually receives and educates to the teachers' profession two hundred and fifty-six pupils of both sexes, selected by the several town superintendents, each county being entitled to twice the number of its representatives in the popular branch of the legislature. These pupils remain in the institution from three to five years, according to their attainments.

Each county in the State is authorized under the charge of a committee appointed by the town superintendents to hold a Teacher's Institute for the improvement of teachers, for periods varying from two to four weeks, spring and fall, the expense of which is borne in about equal proportions by the teachers who attend, and by a State appropriation for this purpose. At these institutes, able and scientific lecturers are in attendance, and a thorough review of the several branches of elementary education, and of the most effective modes by which they may be communicated, is had.

The inhabitants of any two or more adjoining districts are authorized by law to form Union Schools, with a Board of Education, and with the power of raising by a general tax on property, such amount as may be requisite for affording free instruction for every child. This admirable system is beginning to be very generally adopted in the several villages and larger towns of the State, and with the most gratifying results. Several weak, feeble, and inefficient districts are thereby consolidated into one—new life and vigor are communicated to them—ample funds placed at their disposal, and a deep and pervading interest brought to bear upon their organization.

Here, then, is the vast machinery of popular education in full operation: 12,000 schools taught for an average period of eight months during each year, by teachers of both sexes, in which 900,000 children are annually gathered, and for the support and maintenance of which nearly $3,000,000 are annually raised and expended by authority of law. It only remains to inquire, 1*st*. From whence sprang this mighty and

all-pervading system; what was its origin, and by what successive steps has it reached its present elevation? 2*d*. What results is it actually accomplishing in the intellectual and moral education of the rising generation? and 3*d*. What influences is it destined to exert upon the future well-being of the community, the progress of civilization, and the advancement of Christianity?

1. At the opening of the session of the legislature in 1795, His Excellency George Clinton, the first governor of New York, in his annual message, urgently and earnestly recommended "the establishment of Common Schools throughout the State."

On the 11th of January of that year, the Assembly appointed a committee to take into consideration this portion of the governor's message. This committee consisted of Jonathan Nicoll Havens, of Suffolk, Chairman, David Brooks, of Dutchess, David Pye, of Orange, Ebenezer Purdy, of Westchester, Daniel Gray, of Rensselaer, Adam Comstock, of Saratoga, and Richard Furman, of New York. On the 19th of February, Mr. Havens from the committee, reported a bill "for the encouragement of schools" which passed the House on the 4th, and the Senate on the 22d of March, and became a law on the 9th of April. By this act the sum of £20,000, or $50,000, was annually appropriated for five years "for the purpose of encouraging and maintaining schools in the several cities and towns in this State; in which the children of the inhabitants residing in the State shall be instructed in the English language, or be taught English Grammar, Arithmetic, Mathematics, and such other branches of knowledge as are most useful and necessary to complete a good English education." The amount thus appropriated was apportioned among the several towns, according to the number of taxable inhabitants in each; and the boards of supervisors of the respective counties were required to raise by tax upon each town, a sum equal to one half of that apportioned by the State, to be applied in like manner. Under this act, Common Schools were

organized in the several counties of the State (then numbering only twenty-three); and from the returns made in 1798, it appeared that the whole number of districts in which schools were taught, and from which reports were received in accordance with law, was 1352, in which 59,660 children were taught during the preceding year.

At the expiration of the five years with which the appropriation terminated, several ineffectual attempts were made by the friends of education in the legislature to continue the system; but notwithstanding the repeated and eloquent appeals of Gov. George Clinton, Jay, and Lewis, and the earnest efforts of other eminent statesmen and philanthropists the organization was abandoned in 1800, and no efficient steps were taken for its renewal, until after the lapse of more than ten years. In 1811, a commission was appointed by Gov. Tompkins, in pursuance of an act of the legislature "to report a system for the organization and establishment of Common Schools." The Commissioners consisted of Jedediah Peck, of Otsego, John Murray, jun., Samuel Russell, Roger Skinner, and Samuel Macourt. On the 14th of February, 1812, they submitted a report, accompanied by a bill, comprising substantially the main features of our Common School System, as it existed up to the year 1849. Fifty thousand dollars were apportioned by the State, from a fund specifically set apart for that purpose among the several counties and towns, in proportion to the population of each, and an equal amount was required to be raised by the board of supervisors of the respective counties, and applied to the same object. The aggregate amount thus received was distributed annually among the several school districts, according to the number of children of a suitable age to attend school, residing in each, to be expended exclusively in the payment of the wages of duly qualified teachers. Three Commissioners and three Inspectors of Common Schools were annually to be elected in each town, and three Trustees, a clerk and collector in each district. A State Superintendent was required to be appointed

by the legislative council, upon whom should devolve the general supervision, direction, and control of the system. This office was conferred upon GIDEON HAWLEY, ESQ., who continued to hold it until 1821, when he was displaced, from political considerations, and a successor appointed whose incompetence was so glaringly obvious that the legislature promptly abolished the office, and devolved its duties upon the Secretary of State, to which office they have continued to appertain until a very recent period.

The number of districts organized under the new system, prior to the 1st of January, 1816, was about 5,000, in which about 200,000 children were instructed. Under the administration of De Witt Clinton, the public interest was powerfully directed by that eminent statesman to the condition and advancement of the common schools; and the impulse thus given to the cause of elementary education was energetically followed up by his successors. The enlightened and vigorous supervision of the several Secretaries Yates, Flagg, Dix, Spencer, Young, Benton, Morgan, and H. S. Randall, aided as it was by the efficient exertions of the several local officers connected with the administration of the system, gave animation and life to the entire organization; and has enabled it in the face of many formidable obstacles to attain to its present pre-eminence. The Library System was engrafted upon it in 1838, through the efforts and exertions of Secretary Dix, the Rev. Dr. Potter, now Bishop of Pennsylvania, and the venerable James Wadsworth of Geneseo.

In 1840, the plan of County Supervision was adopted, in accordance with the recommendation of Secretary Spencer, and County Superintendents were appointed for each county in the State. In the midst, however, of the rich harvests of beneficial results which this system was effecting, the law was in 1847 repealed, at the instance of a few aggrieved and selfish tax-payers, who seemed incapable of weighing the solid and permanent benefits of this efficient species of supervision against the paltry cost of its maintenance. In 1843, on the

recommendation of Col. YOUNG, the offices of Town Commissioners and Inspectors of Common Schools were abolished, and that of Town Superintendent substituted in their stead. In 1844 the State Normal School, for the education and preparation of teachers, was established under the immediate auspices of Col. YOUNG, Rev. Dr. ALONZO POTTER, the Hon. CALVIN T. HULBURD, of St. Lawrence, and FRANCIS DWIGHT, Esq., of Albany, then editor of the "District School Journal." In 1849, the "Act for the Establishment of Free Schools throughout the State" was passed, by the provisions of which the inhabitants of each district were authorized and required to provide annually by a district tax, for all the expenses of supporting and maintaining their school beyond the amount contributed by the State, an equal amount levied by the board of supervisors on the county, and an additional equal sum levied upon the taxable property of each town. This act, which passed the legislature by a nearly unanimous vote, was submitted to the people for their approval at the ensuing general election, and sustained by a majority of upwards of 150,000 votes. In consequence, however, of the neglect on the part of the local boards of supervisors to provide the requisite funds directed to be raised for the support of the schools, the burden of taxation fell, with an insupportable weight upon the districts; and before any opportunity had been afforded for testing its value, public sentiment in the rural districts declared decidedly for the repeal of the obnoxious law. The question was again submitted to the electors of the State by the legislature, and at the general election in the fall of 1850, heavy majorities were given for repeal in forty-two of the fifty-nine counties. These majorities were, however, overcome by the unprecedentedly heavy vote against repeal cast in the several cities and large towns of the State, and especially in the city of New York. The legislature of 1851, not feeling at liberty, under the vote thus taken, to repeal the act entirely, passed a new bill transferring the burden of taxation for the support of schools from the districts, towns, and

counties to the State at large; requiring the sum of $800,000, now increased by the act of 1856 to three fourths of a mill, to be annually levied and collected on the taxable property of the State, and applied, together with the annual revenue from the Common-School and U. S. Deposit Funds, to the payment of teachers' wages, the replenishment of the district library, and the purchase of necessary school apparatus. In case the share of this combined fund apportioned to the respective districts, and applicable to the payment of teachers' wages, failed to meet the charge upon it, such deficiency was required to be met by a rate-bill against those sending to school, as theretofore had been usual. This act of 1851 is still in force. At the last session of the legislature the office of town superintendent was abolished, and that of District Commissioner substituted in its stead.

2. The results of this magnificent system of public instruction, upon the moral and intellectual welfare of the rising generation, are gratifying in the extreme. The progress which has been made through its instrumentality, during the last half-century, in scientific knowledge of every description, can best be appreciated by those who, familiar with the highest learning in vogue at the commencement of that period, have traced its expansion, its elevation, and its rapid diffusion, during the intermediate time. It is not too much to say that the faithful and attentive pupil of the present day, who has attained to the age of sixteen years, is far in advance in all those elements which constitute the practical English scholar, the finished mathematician, the complete grammarian, the thorough geographer, the accurate book-keeper, the well-informed historian, the ingenious natural philosopher, the skillful chemist, the practical astronomer, geologist, and mineralogist, —far in advance, intellectually regarded of the highest and most cultivated minds of the preceding generation of far more mature age. Nor has this progress been confined to the mere development and culture of the intellectual powers. A deep-toned, steadily sustained, and reverentially regarded moral and

religious influence has been brought systematically and habitually to bear upon the hearts and the lives of the inmates of these Temples of Knowledge; and its elevating, refining, and purifying effects may be distinctly traced over the entire surface of community. Public opinion everywhere demands, and the law rigorously requires, that each one of the fifteen thousand teachers to whom are annually confided the mental and moral culture of the youth of our great commonwealth, should in addition to the requisite literary qualifications, possess an irreproachable moral character;—public opinion demands, with a clearness and distinctness not to be evaded, that the Word of God and the Christianity of the Bible should be recognized and daily inculcated in each one of these institutions of public instruction; and the time has fully arrived when the indissoluble connection between Education and true Christianity is perceived, appreciated, and carried into practical effect.

3. The influences which such a system is destined to exert on the lives and characters of those who are subjected to its discipline, and upon the community of which they may be members, can scarcely be over-estimated. The criminal statistics of the State show conclusively that not one in two hundred of the convicts in our prisons and penitentiaries have received the benefit of even such a common-school education as existed a quarter of a century ago. The most experienced educators of the Union, men and women who have grown gray in the task of molding the characters, and directing the energies of the rising generation, and who have long stood at the head of their noble profession, have unanimously, and without the slightest consultation with each other, expressed their decided and clear conviction that ninety-nine, at least, out of every hundred faithfully availing themselves of the benefits, intellectual and moral, of our common schools will become good citizens, upright, honorable, and intelligent men and women, capable of discharging with fidelity and ability every duty of public and private life, truthful, generous,

humane, benevolent, and useful,—blessings to themselves, blessings to their families and friends, blessings to the community in which they reside, and blessings to the human race of which they form a part. And in this conviction, from my own knowledge of our noble and beneficient system of public instruction, from an experience of nearly twenty years in its practical operation, and from an extended personal acquaintance with its daily details both in the city and the country, I most cheerfully and cordially concur. I regard the system as containing within itself the elements of our future prosperity, greatness, and felicity as a people; elements not elsewhere to be found in the same combination or condition, and for which no adequate substitute has been or can be found in any, or all, of the other institutions of our modern civilization. Look at Massachusetts, —inconsiderable in point of population, when compared with other States; destitute of all external advantages, either of soil, climate, or physical resources for the accumulation of wealth and influence,—proudly taking rank first among the foremost in the broad arena of moral and intellectual power; lavishing upon our great republic and the civilized world, with regal prodigality, her stores of mind, her statesmen, her judges, her counselors, her legislators, her scholars, her clergy, her advocates, her educators! To what but her magnificent system of Free Schools, of two centuries' duration is she indebted for this noble distinction? Look at the other New England States, at the Middle, and many of the Western and Northwestern States, where education is universally diffused, and the Common School exists as an *institution;* and contrast them with those States, chiefly in the Southern portion of the Union, where other and adverse influences prevail—where the Common School if it exist at all, exists as an asylum for poverty and degradation—a boon graciously provided by the rich, the great and the learned, for the children of the ignorant and the destitute, *and for them alone;* compare Massachusetts, New York, Pennsylvania, Ohio, Michigan, Iowa, and Wisconsin, with communities in which public instruction is ignored as

a duty devolving upon the State, and where it is sparingly dealt out as an act of special and extraordinary favor; and the moral and intellectual influence which has already been exerted by education universally diffused, will be so strikingly apparent that he who runs may read. The scroll upon which is inscribed the future destiny of nations and communities, as well as of individuals, is mercifully and wisely withheld from our inspection; but we are assured on authority which commands our highest reverence, and demands our undoubting assent, that if we "train up a child in the way he should go, he *will not depart from it.*" And when we look abroad over the great area of our own "Empire State" with its noble and flourishing cities, its profusion of rich and beautiful towns, its magnificent public works, and its millions of enterprising and energetic citizens, and know that each successive day nine hundred thousand children, soon to become citizens themselves, and to take our places in the grand march of modern civilization, are gathered in our twelve thousand Temples of Knowledge and of Science; that in each of these temples the Word of God is reverently read, the solemn hymn of prayer and praise to the Great Creator duly offered from young and innocent hearts and lips; and the day thus consecrated, devoted to the communication and the attainment of useful and practical knowledge,—we need entertain no fears for the future. Vice and ignorance alone in this world are to be dreaded. Wisdom and knowledge and goodness and virtue, early instilled into the susceptible mind of youth, nurtured and cherished at the family altar, at the public school, at the temple of worship, and in the crowded marts of business and of pleasure,—these must inevitably in the order of providence lead to greatness, to prosperity and happiness here, and to a joyful immortality in that "better land," where knowledge is intuitive, and faith is swallowed up in certainty and bliss.

ARTICLE VII.

Topographical Survey of New Jersey.

By Egbert L. Viele.

The very marked geological developments which occur in this country, and the vast mineral deposits which have been denied to scarcely any State of the Union, have led in many of the States to scientific examinations, more or less thorough, under the patronage of the State governments. While these examinations and explorations have in many instances exhibited extraordinary results, they have failed, in a great measure, to make these results of practical value, for the want of correct topographical maps upon which to delineate the geological formations and mineral deposits. This fact had become so evident to the State of New Jersey, that although a very thorough, elaborate, and valuable investigation of her mineral resources had been made in the years 1834, '35, and '36, it was determined to have a re-examination, based upon a Topographical Survey. Accordingly, the legislature of that State passed an act for that purpose in the year 1854, and appropriated a sum of money to carry on the work. I have been requested to lay before this Society the results thus far of the topographical department of that Survey. With the exception of the survey of our coast by the general government, this is the first of the kind ever undertaken in this country ; and a natural interest is excited in its progress, in view of the necessity every day becoming more apparent for a correct knowledge of the physical details of our territory. The rapid strides which we, as a people, are making in every branch of human industry ; the wealth which has remunerated those who with

proper skill have been engaged in the development of our natural resources,—all unite in demanding a correct basis for the prosecution of their labors. Several of the States of Europe have set on foot, and some of them have completed, elaborate surveys of their territories, which reflect high honor both on the governments themselves, and on those who executed them. The ordnance survey of England, and topographical maps of France and Austria, as tributes to science and works of art, are marks of an enlightened progress which must forever illustrate a distinct era in the history of those nations. The nature of a geodetic survey is such as, from its scope and expense, to require the patronage of governments, although governments are not always the first to appreciate or to encourage the efforts of science.

Geodesy is the science by which we determine the figure and dimensions of the earth, and the exact position of all points on its surface.

The first step to be taken in a geodetic survey, is to make a general reconnoissance or examination of the country, for the purpose of determining the most elevated or most advantageous points, which can be used for trigonometrical purposes. The next is the careful measurement of a base line suitably located upon a plane as nearly level as possible, having previously selected certain elevated points in the vicinity, one or more of which may be seen from the extremities of this base line. We then measure with a theodolite the angles included between the base line and the lines drawn from the extremities to the several visible points, which are called stations. From these observations we are enabled to determine the length of these lines, which in their turn serve as bases from which to determine the length of other lines. Observations for the determination of latitude and longitude are made at both extremities of the base line, and also at most of the principal stations.

The triangles are made as large as the nature of the country and the power of the instrument will admit, both on account

of economy in time, labor, and expense, as well as to avoid error,—since the larger the triangles the less the chance of error. Within these triangles we select other stations, which are connected with the first by observations. The smaller triangles thus formed are called secondary, the former being designated as primary. Within the secondary still another series is formed, called tertiary; which last serve as bases for the work on the plane-table sheets.

The plane-table is an instrument which consists principally of a small rectangular tablet, about one foot square, secured on a tripod, and having an arrangement for making it level. A sheet of paper, designed to receive the map, is stretched upon the surface. Accompanying the table is a ruler, to which is attached a telescope, whose line of collimation is in the same vertical plane with the edge of the ruler. Before commencing the work in the field, the positions of at least three trigonometrical stations are determined, by means of their co-ordinates, upon each plane-table sheet. The lines connecting these points serve as bases for all the work on the sheet; since by means of intermediate points, an infinite number of smaller triangles may be constructed with the ruler and telescope. The roads, streams, and contour lines intervening between the points are sketched in by the topographer.

Having thus indicated the nature of the operations in the field, the next step is to transfer this field-work to paper, or, in other words, to construct a map.

If we could trace upon a sheet of paper the meridians of longitude and parallels of latitude, precisely as they are represented upon a globe, we should have no difficulty in referring each locality to these conventional lines, and thus constructing a map which would be an exact representation of nature.

But the surface of the earth being spherical, we cannot represent it upon a plane surface without altering to a greater or less extent the proportions of the territories, the distance between the places, the sinuosities of the rivers, &c. We

must, therefore, resort to some method by which these representations can be made, while distorting as little as possible the actual distances.

To make a map of the earth, we represent each hemisphere in perspective; that is to say, we suppose the eye to be situated at some arbitrary but fixed position in space, and that a transparent plane is interposed between the eye and the hemisphere. If we conceive every point of the hemisphere to emit a ray of light, each ray would pierce this transparent plane in a point; and supposing the plane to retain this image, we would have a representation of the hemisphere as it appears to the eye.

When we wish to make a map of a more limited extent of country, such as a State or Territory, we resort to an arbitrary system of right lines or curves to represent the meridians and parallels; constructing a net-work upon which we place each locality, according to its latitude and longitude. This is called a projection. There are various methods of projections, all possessing a certain degree of merit. Of course those are the best which approximate nearest to an actual representation. The method of projection which has been selected as offering the most advantages in constructing the map of New Jersey, is the one which has been generally applied to the topographical maps formed on the geodetic surveys of many of the European States. To construct a map on this projection, we assume first a central parallel. Along the parallel a cone is conceived to be tangent to the sphere, and we develop the central meridian on that element of the cone which is tangent to it. Then developing the cone on a tangent plane, we find the central parallel falling into a curve with its center at the vertex, and the meridian into a right line. Laying off upon the developed meridian certain elementary distances, we draw through the points of division a series of arcs concentric with the developed parallel. The spaces between these arcs are evidently the development of the zones between the parallels.

All these zones have in development the same relation to

each other, and the same length and width as they had on the spheroidal surface; the total area remaining unchanged.

Each meridian is so traced as to cut each parallel in the same point in which it intersected it on the sphere. For areas of no very great extent, the intersections are almost rectangular. The distances along the parallels are strictly correct, but distances along the meridians increase in proportion to the diminution of the cosine of the angle between the radius of the parallel and a tangent to the meridian at the point where they intersect. Each quadrilateral of projection preserves its spheroidal area; but its two diagonals become unequal, one increasing and the other diminishing as we go from the center to the corners of the map, the inequality being greatest at the east and west polar corners.

In constructing the map of New Jersey the principal meridian and parallel are drawn through Princeton; the other meridians and parallels having been constructed, we divide each quadrilateral of projection into smaller quadrilaterals corresponding to the plane-table sheets. These are referable by the co-ordinates of their corners to the central point; and by having on each plane-table sheet at least three trigonometrical points, we have no difficulty in locating the position of the sheet in the field.

Before stating the progress of the work in the field, or the results accomplished, it is proper to give the general reconnoisance upon which the field operations are founded.

GEOGRAPHICAL POSITION AND EXTENT.

The State of New Jersey lies between the parallels of 41 deg. 20 min., and 38 deg. 55 min. 50 sec. north latitude, and the meridians 73 deg. 54 min. 10 sec., and 75 deg. 34 min. 15 sec. longitude west from Greenwich. It occupies a peninsulated position with respect to the State of New York, which bounds it on the north, and from which it is separated by an artificial line running from the point where the parallel of 41 deg. intersects the Hudson river, to the point where the parallel of 41 deg. 20 min. intersects the Delaware river. This line is 48.5

miles in length. On the east the boundary line follows the Hudson river until it empties into the bay of New York, thence it follows the strait which separates the State from Staten Island. The remainder of the eastern and southwestern boundaries is formed by the Atlantic ocean. The Delaware river forms the western and southwestern boundaries, separating the State from Pennsylvania and Delaware. The total area contained is 7,750.93 square miles, being 4,960,595.20 acres, of which 1,767,991 acres are improved, leaving a residue of 3,192,604.20 acres unimproved land. The total value of the farm land is $120,237,511.

PHYSICAL FEATURES.

The elevated portions of any country form the key to its topography. The hills and mountain ranges furnish the sources while they direct the courses of the rivulets and rivers. By their disintegration they form the plains and furnish the soils of the valley. By them the climate is in a great measure determined; and around their summits are nursed the clouds which bring the early and the latter rains. Hence it is that when we would indicate the topography of a country, we go first to its mountain ranges; although it is difficult to form a just conception of these great features when the description is limited by political divisions. The most elevated, most distinctly marked, and most clearly developed mountain range in the State of New Jersey, is that called the Blue Mountains. Entering near the initial point of the northwestern boundary, on a base of 3 miles, and with an elevation of 1,400 feet, it takes a southwesterly direction, widening at the base, but maintaining the same average height for a distance of 15 miles, where it becomes 6 miles in width. Then it begins to contract, and finally leaves the State at the Delaware Water Gap, with a width of but half a mile, and an elevation of 1,500 feet; having an entire length in the State, of 25 miles, with a remarkable uniformity of elevation. The greatest depression is at Culver's Gap where it is 800 feet in height.

Between the foot of the western slope and the Delaware river is a valley, averaging one mile in width. This valley is drained by the Flatkills, a stream which runs, through nearly its entire length, in a southerly direction, parallel to the Delaware, being fed on its way by an infinite number of small streams which serve the double purposes of drainage and irrigation. East of Blue Mountains, and contiguous to it, lies a broad and fertile valley, known as the Kittatinny Valley, extending from the northern boundary in a southwesterly direction parallel to the Blue Mountains, through the counties of Sussex and Warren to the Delaware river, being about 40 miles long and 10 broad. It is broken through its entire extent by a succession of low, rounded hills, which have a culminating point about 15 miles from the northern boundary, causing the drainage of the southern portion to flow towards the Delaware, and that of the northern portion to flow in the opposite direction, through the State of New York, towards the Hudson. The Paulinskill drains the southern part and the Walkill the northern. Both streams are fed by numerous small lakes or ponds whose basins are high up in the mountain ranges which bound the valley. So extensive are these reservoirs, that for a considerable portion of the year the Walkill overflows its banks, inundating the country which it ought to drain, and destroying the fertility of a large tract of country which would otherwise be smiling fields. The next marked topographical feature is the continuation of the Highlands of New York which enter the State in the same general direction as the Blue Mountains, but without its continuous aspect. This range consists of a succession of parallel ridges intersected by occasional narrow valleys, but all following the same general direction northeast by southwest. These ridges have different names in the different localities where their features appear more marked; yet they form a connected whole, whose base in the northern boundary is about 25 miles, gradually narrowing to the south, being about ten miles wide at the Delaware. Within this range lie several large and

beautiful lakes, and numerous small ponds. A thousand mountain streams have here their source, and some of them form the principal rivers of the State.

The Raritan river rises here, and running in an easterly direction, gathering on its way from every hill its spring, and from every valley its drainage, it becomes at New Brunswick, 15 miles from its mouth, a navigable river, and empties through a broad arm into the Atlantic Ocean, having a total length of 72 miles.

The Passaic, 70 miles in length, rises here, and empties into Newark bay, and thence into the Atlantic. The Hackensack, 40 miles in length, rises in the same range, although not in the State, emptying also into Newark bay. Besides these rivers, the numerous valleys which intervene between the ridges have all their drainage streams. The Pequest, 30 miles in length, emptying into the Delaware, is a bold and rapid stream, affords abundance of water power, and drains a fine valley. The Musconetcong river is the outlet of Lake Hopatcong, which lies almost in the heart of the range. This lake is five and a half miles in length and one and a half miles wide, containing nearly four and a half square miles of water, or about 2,500 acres. It is now used as the feeder of the Morris canal.

The Musconetcong is 40 miles in length, flowing in nearly a straight line in a southwest direction, through a deep and narrow valley. It has a large volume of water, and gives motion to a number of mills. There are many other streams, draining smaller valleys between these ridges,—generally branches of either the Raritan or Passaic. Next to the chain of the Highlands, on the east, lies a broad, slightly elevated, and slightly undulating plateau, extending over a large area, from the northern boundary to the Delaware, with an average width of 20 miles. The surface of this plateau is broken by a succession of narrow, abrupt ridges, which traverse it in a northeasterly and southwesterly direction. These ridges are so much higher than the surrounding country, as to afford fine

points for observation and for trigonometrical stations. This plateau terminates in the southeast, at the narrowest part of the State, on a line drawn from Amboy to Trenton, which line was at one time the shore of the sea. The remainder of the State below this line, and as far as Cape May, is almost a level plain. A transverse line of gentle elevation divides it sufficiently to cause a portion of its drainage to flow towards the Delaware, and another towards the Atlantic. The streams, of which there are a great number flowing in both directions from the summit level, have so slight a descent, and a current so sluggish, that in many places they may almost be regarded as a succession of swamps and ponds. The whole character of the country forms a striking contrast to the other portions of the State. The latter came into existence amid the convulsive throes of nature which followed the early affinity of matter. The former, born of the ocean at a calmer period, seems in its gentle uniformity to reflect the eternal lullaby of the waves which ushered it into existence. More than once since it arose from the water, this area has sought its native element; rising for a period to court the smiles of the sun, then dipping with its green vesture into the sea,—seeming indications on the bosom of the earth of the pulsations of the great heart within it.

Nearly the whole of this extensive area is covered with a dense forest, rendering it a matter of impossibility to obtain a view of the surrounding country, even from the highest of the few hills which appear upon the surface. There is one marked feature connected with the topography of this portion of the State. From near Cape May, the extreme southern point, there extends along the coast, for a distance of 100 miles, a sheet of water, separated from the sea by a narrow strip of sandbeach, and communicating with it by openings across this beach at several different points along its length. The action of the winds and waves are constantly producing changes, both with regard to the beach itself and the openings through it; still, the interior channel remains constantly open,

and is used as a means of commercial communication between the towns upon the coast.

This rapid glance at the physical features of the State, while it indicates their marked peculiarity, will serve at the same time as a guide in following the detailed operations of the geodetic and topographical parties.

FIELD WORK.—ORGANIZATION OF PARTIES.

There is no duty connected with the survey more difficult or delicate than the organization of the different parties. Their duties are of such a nature as to require the greatest skill, combined with the highest integrity. As the parties are broken up at the close of the season, we are deprived of the advantages which would be derived from their increased proficiency. Much depends, therefore, upon judgment in selecting proper persons for the different positions; and there is always a chance of being deceived until their character and capacity have been tested in the field. Fortunately, but few instances have occurred in which the persons were not what they professed to be; and these were not such as to result in any material detriment to the Survey.

Both the triangulation and topographical parties are composed permanently of a chief, and of a first and second assistant. When circumstances require it, one or more temporary assistants are employed. The chief has the immediate charge of the party, and upon him depends its good conduct and the accuracy of the work. He keeps a daily journal of everything connected with the survey which transpires in his party, and transmits a weekly abstract of the same to the office. The first assistant gives to the chief such assistance as he may require in the details of his work. He also keeps a record of all the information he may be able to obtain concerning the character of the soil and mineral deposits; communicating semi-monthly all of the items connected with the geology of

the district in which the party may be located which he may deem of sufficient importance.

These reports are of material assistance to the geologist, in going over the ground. The duties of the second assistant are more manual than otherwise. As soon as each plane-table sheet is completed, it is turned into the office, accompanied with the manual containing the numbers corresponding to the houses on the sheet, and the names of the occupants of each house; the amount of cultivated and uncultivated land in each farm; the depth of every well, and the soil passed through in digging it; the three crops which have the highest average; and if any, what mine or mineral property is being worked or developed by any person whose name is in the manual. This furnishes a complete index to the present condition of every section of the State, upon which reliable estimates and calculations may be based.

TRIANGULATION.

In the examination of the physical features of the State, we have seen that while in the northern division we have two distinct mountain ranges, besides many isolated points of elevation, the southern division presents scarcely a single prominent point; and therefore, that a triangulation of the latter can only be accomplished by erecting stations at the necessary points. It follows, that the triangulation would be first pushed towards the north; more especially since the Coast Survey, in prosecuting its hydrography, has completed a secondary triangulation of the Atlantic coast and the Delaware river as far as Trenton; thus giving the plane-table parties in the southern counties a sufficient number of geographical points to enable them to prosecute their work without chance of error.

As was stated in the report of last year, the coast of the United States, for the purposes of the geodetic survey, has been divided into eleven sections, in each of which a base line from five to ten miles in length has been measured. The coast

of New Jersey is included in the second of these sections, the base of which is on Fire Island, which adjoins the coast of Long Island. The primary triangulations extend across the State, from Amboy to Trenton, and down the Delaware river. The necessity for measuring a base-line in the State is thus obviated, since a side of this primary triangulation can be assumed as our base of operations. The side which has been selected, is the line joining Mount Rose station, in the county of Mercer, with Springfield station in the county of Essex. The length of the line is 29 miles and 43-100. The latitude of Mount Rose is 40 deg. 22 min., and its longitude 74 deg. 43 min. The latitude of Springfield is 40 deg. 41 min., and its longitude 74 deg. 21 min. This line occupies a central position, and is very favorably situated for the continuation of the triangulation, especially towards the north. The many prominent points there found have afforded us a choice of positions, and we have thus been able to establish such stations as to give us well-conditioned triangles, which we have extended to the Delaware river, and the northern boundary, one station being in the State of New York. The number of stations occupied is twenty-five; the number of observations made is four hundred and sixty.

In conclusion, a brief reference should be made to one or two facts which have been mentioned, for the purpose of pointing out more distinctly their bearing upon the general welfare of the State.

It appears that out of 4,960,595 acres of land included within the limits of the State, there are 3,192,604 acres entirely uncultivated. Yet there are in New Jersey no deserts, nor dismal swamps, where the labor of man would be exhausted in vain efforts to redeem nature for his wants. No charge has ever been made that the people of New Jersey are deficient in energy, in intelligence, or in skill. Still, there must be some reason, why so much tillable land should remain undisturbed by the plow of the husbandman, while millions of non-producers almost within sight stand ready to purchase every grain

that is offered to them. The reason why it is so, is sufficiently obvious; but why it should remain so, is not so plain. Why it is so, arises from the fact that the early settlers of every country establish themselves along the rivers and smaller streams, where a little toil is remunerated by an abundant harvest. This soil, however, becomes in time exhausted by constant tillage; and the farmer finds that he cannot from his own resources renew it, and that he must purchase foreign fertilizers to maintain the production of his farm. His profits become diminished in consequence, and he or his sons begin to think of seeking a new sphere, where their labor will meet with a better reward. Now, we would ask if those lands which are not on the rivers and streams, and which were not at first as productive as the more recent alluvials, cannot be made as productive with a less amount of fertilizing matter, and at a less cost, than is now required to fructify the exhausted lands. This is an important question which in view of the proximity of the market, in view of the increasing demand, and in view of the great amount of scientific skill which can now be brought to the aid of agriculture, should engage the earnest attention of the farmers of the State.

ARTICLE VIII.

The Electric Telegraph; its Influence and Geographical Distribution.

By Marshall Lefferts.

The prosperity and duration of a nation depend upon its application of progressive science to the arts. The lamp of the scholar may burn brightly over his philosophy, and the pencil of the artist give beauty and color to the scenes he would depict: Rome and Greece were not excelled in their poetry, painting, sculpture, and fine arts. But these only serve to embellish the history of their fallen greatness, while the civilization of our times bespeaks its duration, in the steamers, railways, and telegraph. *They* give substantial happiness to our people, and mark it as the age of the "power of thought."

Had men been created savages, they would have remained savages forever. The history of the world does not present a single instance of a nation of savages having become civilized by their own spontaneous exertions. But a variety of climates were ordered; a variety of soils and productions of vegetable and animal life. Did all possess the same climate and the same productions, the same length of day and night, whence would come either the necessity or the desire to possess and trade, and whence the commerce, and interchange of the nations of the world, in the path of which follow civilization, wealth, and power, science and art?

The great city of Tyre, described in the sacred volume "as a joyous city whose antiquity is of ancient date, whose

merchants are princes, whose traffickers are the honorable of the earth," was possessed of a rich commerce. But in those days man was not master of those auxiliaries which now multiply his skill and muscle an hundred fold. He had not then learned the arts by which the products of thought and labor could be transferred from nation to nation with the greatest facility and least expense, an art upon which the social condition of the world depends.

The distribution of the races of men on the globe, imposes the necessity of intercommunication; and for this we are no longer dependent upon the watery highways of nature, but fly with the wings of steam upon the road that binds us together with its sinews of iron, and flash our thought with lightning speed upon the telegraphic wires. *These* are the present highways for the interchange of exalted labor, and upon which the growth of cities, the cultivation of barren wastes, the diffusion of spiritual knowledge, the development of science and art, and the well-being of nations depend.

Our national characteristic of seizing with avidity upon every new development of science or art, and reducing it to the practical and economic wants of man, is more readily seen in the application and use of *electricity* and *magnetism* to the telegraph, than perhaps any other of the world's great achievements; and no one can see and hear of the wonderful, nay magical effects of the telegraph without a desire to learn its history and operation,—a desire only heightened by the observation of the poles and wires that interlace and extend to the very borders of our far-reaching settlements.

I am not, however, to consider the many modes or machinery of operation, nor to discuss the rival claims of inventors, nor can I entertain you with explanations of the beautiful phenomena of electricity and magnetism. To do so would require not only diagrams, but machinery and apparatus. But my purpose is to consider the *application of electricity* to the telegraph, its influence, and the place it holds as the prime minister of this society in the field of physical geography.

For, casting our eyes to the maps, we cannot be otherwise than impressed with the importance of these telegraphic connections, in their political and social relations, their power and agency in the future extension of knowledge, civilization, and truth.

The successive steps in the discovery of the physical laws upon which this invention depends, are the results of the watchings by day and night, deep study, thousands of experiments, reasonings, models and plans without number, and the most patient toil,—not of one man, but of many thinkers in many generations. A host of names claims our notice and praise. But I may be permitted to mention the names of Grey, Oersted, Hausteen, Sturgeon, Arago, and Henry, without whose industry and genius the present electric telegraph would never have existed. These are names that are rarely pronounced in connection with the mechanical inventors who have profited by their labors.

In order to elucidate our subject more clearly, I must make a passing reference to electricity, the great power which actuates and gives life to the system of communication we propose to consider. Electricity exists in every thing and everywhere, upon the surface of the globe. Space itself requires but excitation to develop its hidden energies. The earth forms a gigantic and powerful magnet, showing its electrical power by the mere disturbance of molecular matter. The wise men of Greece taught that fire, air, water, and earth were the primary elements of nature; but it was left for modern science to reduce these compounds, and with more truth to claim that the Almighty fiat went forth clothed with electricity to create nebula and space. However, this may be, since the time of Newton physical science has received no such important additions as have been added by the now known laws of electrical phenomena. In the contemplation of its sublime and mysterious power we watch its operation with the deepest interest, as on the one hand we see it active in the decomposition of bodies, on the other in their re-forma-

tion and growth,—now disturbing the constituents of water, and making them assume their gaseous form, and anon causing these very gases to reunite and become water; now flashing its brilliant rays in the form of light, now defining its rainbow tints on heaven's broad arch; now flying with a speed almost beyond belief as our trusty amanuensis, bringing us good tidings of distant and much-loved friends; now putting forth its strength as it rides upon the whirlwind and the storm, to shatter and rend to atoms the object which impedes its course. The sturdy oak of an hundred years bows its head before its piercing touch as the sapling to the woodman's ax; and yet in the midst of its fury, while dealing its bolts of death and terror, one single, insignificant point of metal—the lightning rod—will attract it from its fiery course and carry it harmless to the earth.

We find it the trusty watchman to sound the alarm-bells of the city, to open the throttle of the screaming whistle. We find it peaceably at work at Hurlgate, descending fifteen feet or more below the surface of the water, and scattering by its magic power the rocky bed of the river. We find it in the workshop, plating your household articles with silver and gold; while again it is flying through each town and city, bearing the President's message, to be read simultaneously throughout the country. It returns at a bidding to the sick man's chamber, and smooths his pillow of pain. It is the companion of the man of science in the laboratory, silently and gently working in the development of beautiful and delicate crystals.

This is no fancy sketch. It is but a feeble enumeration of some of the phenomena of electricity. And although its application to the telegraph may not be considered the most beautiful or interesting in a scientific point of view, it must be considered the most practical of its applications and the most beneficial to man. With what wings of light would it bear the tidings of the safety of "the Pacific" o'er thousands of miles of wire to every city of the Union, before the echoes of the cannon of her announcement died away in the Highlands of the Hudson!

Let us for a moment consider its discovery and progress, and we will better understand its application to the present telegraph. The electric property of amber, called by the Greeks "Electrone," is said to have been noticed by Thales some six hundred years before the Christian era. The property here referred to is the same as that produced by rubbing a stick of sealingwax upon the sleeve of the coat, when it will attract small bits of paper. History furnishes, however, but few records of its progress until the seventeenth century.

We then find, in 1650, that Dr. Gilbert published a work on magnetism, in which he mentions several new facts as to electric agency.

1730. Stephen Gray made many experiments.

1740, Or thereabouts, Winklee of Leipsic discharged a Leyden jar through wire of considerable length.

1747. Dr. Watson, of England, ascertained the passage of electricity through water, sending shocks across the Thames, and using a wire more than two miles long. These experiments were afterwards repeated by Dr. Franklin (1748), across the Schuylkill at Philadelphia.

1764. Arthur Young in his "Travels through France," describes an electric telegraph, thus:—"Mr. Lomond has made a remarkable discovery in electricity. You write two or three words upon paper, he takes them with him into a chamber, and turns a machine in a cylinder case on the top of which is an electrometer having a pretty little ball of pith suspended by a silk thread; a brass wire connects it to a similar cylinder and electrometer in a distant apartment, and his wife on observing the movements of the corresponding ball writes the words which it indicates. From this it appears that he made an alphabet of movement; and, as the length of the wire makes no difference, you could correspond at a great distance, as, for example, with a besieged city or for purposes of more importance."

1795. Mr. Cavallo, proposed an electric telegraph, giving signals by firing a gas pistol at the distant end of a wire.

1798. Betancourt established a telegraph between Madrid and Arangues, twenty-six miles, through which a current of electricity was passed and gave signals for letters. It is a singular fact, that Spain who thus constructed the *first long line*, has since that period extended the line only from Madrid to Saragossa, and thence to her frontier to connect with France. What a lesson in her history!

1809. Soemering constructed the first galvanic telegraph at Munich, which operated by the decomposition of water. He also rang a bell at the opposite end of the wire. Preceding this, Galvani and Volta had constructed and demonstrated their pile or battery.

1816. Dr. J. R. Cox, then Professor of Chemistry in the University of Pennsylvania, thus speaks of galvanic electricity:—"I have contemplated this important agent as a probable means of establishing telegraphic communication with as much rapidity and perhaps less expense than any hitherto employed. I do not know how far experiments have determined galvanic action to be communicated by means of wires; but there is no reason to suppose it confined as to limits, certainly not as to time. * * * However fanciful in speculation, I have no doubt sooner or later it will be rendered useful in practice." This was in 1816; and all his speculations have been more than realized.

1819. In this year Professor Oersted, of Copenhagen, discovered electro-magnetism or magnetic motion; and it is to this discovery more than to any other that we are indebted for the present telegraph.

1823. Francis Reynolds, of England, proposed a telegraph the operation of which was not unlike those now in use in that country. In the same year Ampere of France constructed the first electro-magnetic telegraph, using as many wires as there are letters of the alphabet.

1825. Professor Barlow, of England, made a galvanic telegraph; but could not succeed on long circuits, from the

diminution of the current, a difficulty afterwards overcome by Prof. J. Henry.

1825. The same year. Mr. Sturgeon, of England, constructed an electro-magnet, winding copper wire around a piece of soft iron bent in the form much used at the present time, and found that when a current of electricity was passed through the wire, the enclosed iron became magnetic, and again demagnetized on breaking the circuit.

1826. Harrison G. Dyer erected poles and wires on Long-Island race-course, and made marks by electricity on chemically prepared paper.

1831. Professor Jos. Henry, then of Princeton College, now Secretary of the Smithsonian Institute, discovered a method of forming magnets of intensity and quantity from equal batteries, making it practicable to produce mechanical effects at a great distance; and this is the description of magnet exclusively used upon lines working upon mechanical principle.

1832. Baron Schelling of St. Petersburgh constructed a needle-deflecting telegraph.

1833. Gauss and Weber constructed a much simplified telegraph, and used seven or eight hundred feet of wire, carried on the tops of the houses of Gottingen.

1837. Steinheil of Munich constructed and put in use in July of that year, his registering electro-magnetic telegraph; and was the first to use the earth as part of the circuit. In June of 1837, Cook and Wheatson of London, took out patents for the deflecting-needle telegraph now in use there. And in October of the same year our Professor S. F. B. Morse, entered his "caveat" for an American electric telegraph; since which period there have been a variety of plans patented and projected.

The House and Bain instruments, so called, deserve notice,—the first the most ingenious and beautifully constructed printing telegraph, and the latter the chemical telegraph,—both in use.

You will therefore notice, that up to the year 1798 all the plans were based upon statical, or electricity by friction. But

in 1800, Galvani discovered the chemical action of acids upon metals to produce electricity, which added largely to the stock of knowledge; in 1809 Professor Oersted made his discovery of electro-magnetism; and Professor Henry, in 1831, of his intensity magnet,—the three great points to which the telegraph is indebted for its utility and practical operation.

Time will not permit the extension of this notice to those who have displayed such untiring industry, perseverance, and genius in perfecting the mechanical details, and rendering practicable the discoveries referred to. Conspicuous among these last, stands Professor Morse. He is known wherever a telegraph extends,—his name respected, his work eulogized, and his fame acknowledged, in every part of the civilized world.

Step by step has the electrical power unfolded itself. From point to point it has progressed with a steady purpose, until the tickings of the register—talking from Maine to Georgia—foretold the hour when, plunging to the reefs of coral and sand, over mountain and valley of the great deep, it would register the greetings of Europe and America.

Let it be borne in mind that although the progress of electric and magnetic discovery covers very many years, yet its practical application is of very recent date. No further back than 1844, only twelve years since, the first line of wires in this country was erected, between Baltimore and Washington, by Professor Morse and associates, with an appropriation of $30,000 from Congress; and from that small beginning do we now possess a greater number of miles of line than any other country on the globe.

Referring to Europe and Asia, we have a distribution of about 37,000 miles of line, divided thus:—

In England, about 9,200 miles of line. But it is to be remembered that they have more wires to each line than we have in the States. For instance, their miles of wire is about 45,000, their lines of connection being as I before said, only 9,200 miles. The line from London to Rugby has nine wires, from Newton junction to Liverpool eleven wires, York

to Newcastle ten wires, and so on. The greatest length of any one line in England is about 600 miles, from Inverness to Plymouth. A large portion of their lines is laid underground. The first constructed was in 1845. For several years they were confined principally to the railways, which is no longer the case. The instrument almost exclusively used, is Cook & Wheatson's deflecting needle, and seems to be worked with great facility. The House printing instrument is also used, but I do not know to what extent.

Germany and Prussia at an early date systematized their system and connections, laid the largest portion of their wires underground, and have now in operation about 5,000 miles of line; the longest continuous one being from Basle to Memmel, about 1,000 miles, and the instrument used that of Professor Morse.

France stands next in order, possessing about 4,500 miles, her longest line from Brest to Grasse, about 900 miles.

The Austrian Empire has about 3,500 miles, her longest line being from Milan, in Lombardy, to Tarnople, in Galicia.

Turkey has about 1,200 miles, not the result of her social progress but of the war. Of this 1,200 miles, 250 is in submarine cable under the Black Sea, connecting Varna and Balaclava. Her longest line is from Belgrade to Constantinople.

Russia has 2,800 miles, comprised in two continuous wires, the longest, from Revel to Sebastapol, about 1,600 miles.

Holland and Belgium have about 1,000 miles.

Switzerland	"	1,000	"
Italy	"	1,900	"
Denmark and Sweden	"	800	"
Spain	"	450	"
India	"	5,000	"

altogether making an aggregate of about 37,000 miles.

In our country the rapid extension of the telegraph system has no parallel in history. Since 1844, we have erected and put in operation about 35,000 miles of line. The wires are to be

found on almost every traveled road, giving telegraphic communication to some 800 towns and cities. In fact, every town and city in the United States has telegraphic connection with New York. Citizens, as a general thing, have no conception of the amount of business daily transacted over the wires. Contracts to buy and sell, pledges of indebtedness, balancing of accounts, all involving millions of dollars, are entered into freely and without fear. From morning till night, day in and day out, are the trembling wires busy with the concerns of an entire nation. How great must be that influence, so quietly, so unobtrusively at work, annihilating time and space, and bringing our distant cities in close relationship for the transaction of business and interchange of the social attentions and courtesies of civil life! Our longest line is from Halifax to New Orleans, a distance following the wires of about 2,400 miles; and it is over this line the steamer's news is sent to all the principal cities.

If we take the lines of Europe, 37,000 miles, and add our own, about 35,000 miles, we have a length of wire that would reach nearly three times around the globe; more than Shakspeare bargained for when he made Puck say,

> "I'll put a girdle round about the earth
> In forty minutes."

For science has demonstrated that the distance I have mentioned can be traversed in less than forty seconds.

While surveying the innumerable lines which cross and recross each other, spanning mountains, rivers, and seas, binding together the distant parts of Europe and Asia, and spreading over the face of our happy land a labyrinth of iron network, our minds are directed to the link yet wanting to complete the chain which is to hold the civilized nations in the bonds of heavy penalties to keep the peace one towards another.

The old and the new world must be connected. The difficulties to be overcome are great, and at the present moment may appear almost insurmountable. But energy, perseverance, and skill have overcome greater obstacles, and many of them

will disappear upon a review of the work already done. It was asserted with equal positiveness that it was impracticable to lay a cable between Dover and Calais; and when the first cable, after its use but a few days, gave out, there were plenty of those industrious and far-seeing people who are always ready with "I told you so." But if they did, a *second* cable was laid, and has continued to work ever since; while, this once accomplished, others soon followed, and no difficulty was experienced in laying the one under the Black Sea, a distance of 250 miles.

There are two lines projected to connect Europe and America. One starting from St. Johns, now a station on the present Halifax line, and running thence to Cape Tormentine, thence by submarine cable (already laid) through the straits of Northumberland to Prince Edwards Island, a distance of about 11 miles, thence to Cape Breton, and from Cape Breton by submarine cable again to Cape Ray, the Southwestern Cape of Newfoundland, and thence over Newfoundland to St. Johns, where it is to connect with the transatlantic cable.

You are perhaps all aware of the unfortunate circumstances which prevented the completion of so much of this line as I have described, during last year. But I am informed that a new cable will soon be in readiness to renew the attempt, which we all hope will be successful. The distance in question is only about 75 miles; and when completed the length of line of the company from St. Johns, New Brunswick, to the terminus on Newfoundland will be about 700 miles.

In England there is already formed a company who have entered into a contract, by the terms of which and their charter they are to finish the line, and operate it between Newfoundland and Ireland by January 1858. The undertaking is indeed one of vast magnitude, a distance of 1,800 miles, and requiring, on account of the inequality of the bed of the ocean on which it is to rest, a cable not less than 22,000 to 25,000 miles long. The manufacture and laying of such an immense rope will be no easy task. Of course it must be made in

pieces, and spliced on board the vessel at the time of its being laid. This, however, is practicable, having been done in other cases. The cable between Dover and Ostend weighs seven or eight tons to the mile. Supposing the cable in question to weigh the same, and we have a total weight of 17,600 tons, requiring quite a fleet of steamers to transport and lay it.

Soundings have been made under the direction of Lieut. Maury, extending from Newfoundland to the coast of Ireland. He remarks: "The bottom consists of a plateau, which seems to have been placed there especially for the purpose of holding the wires of a submarine telegraph, and of keeping them out of harm's way. It is neither too deep nor too shallow. Yet it is so deep that the wire, once landed, will remain forever beyond the reach of vessels, anchors, icebergs, and drifts of any kind; and so shallow that the wires may be readily lodged upon the bottom. The depth of the plateau is quite regular, gradually increasing from the shores of Newfoundland to the depth of from 1500 to 2000 fathoms, or say 10,000 feet, as you approach the other side." Lieutenant Maury concludes that this line of deep sea soundings is quite conclusive of the question as to the *practicability* of a submarine telegraph between the two continents, in so far as the bottom of the ocean is concerned. He says the waters on this plateau are "as still as those of a mill-pond."

There are other questions, however, which present themselves, as, the *required strength of such a cable*, increasing with its bulk to a difficult point. For at or near the Irish coast the perpendicular stretch will be nearly or quite two miles. Also, what will be the *effect of the pressure of the water* upon the cable at this depth, affecting the current of electricity; and lastly, the ability to pass a current over such a length of wire, *unaided* in its passage by relay magnets.

These are presented as the points of greatest difficulty, and perhaps only to be tested by the operation of the cable itself.

The other projected line to which I referred, will start

from Quebec, running to a point on the coast of Labrador, 800 miles; from Labrador, by submarine cable, to Greenland, 650 miles; from Greenland to Iceland, 600 miles; across Iceland, 250 miles; from Iceland to the Faro Islands, 240 miles; from the Faro Isles to Shetland Islands, 200 miles; from the Shetland Isles to Orkney Islands, 50 miles; across the Orkneys and to northern Scotland, about 50 miles; a total of 2,900 miles from Quebec to Scotland. Of this 2,900 miles there would be about the same number of miles of submarine cable as by the other route. But it is claimed, that a decided advantage is found in the cables being short, or broken from point to point, no one stretch being greater than 650 miles; and, of course, greater facility afforded both in laying and repairing.

But little, however, is known of the configuration of this portion of the ocean's bed; but there is no doubt the depth of water is much greater than by the other route. The greatest depth of the ocean is said to be just south of Greenland.

The cable of the Black Sea is laid at a depth exceeding 300 fathoms; and of the cable between Spezzia and Corsica it is remarked, "that after paying it out, as supposed, on the top of a submarine mountain, at a depth of 180 to 200 fathoms, it suddenly came to the edge of a precipice, making a total of 350 fathoms running out with fearful velocity;" showing the strength of the cable to resist such a strain.

The cable between Sardinia and Secali will be laid at a depth exceeding 500 fathoms.

The difficulties to which I have incidentally referred, are not, in my opinion, to remain as permanent obstacles to the accomplishment of the work. If science has given birth to those agencies which have enabled us to accomplish so much, how reasonable is it to suppose that lesser difficulties will be overcome! The best talent of the world is more deeply engaged in the study of electrical and magnetic effects than in any other branch of science; and hardly a day passes without witnessing some new and important result. The most serious

question is really the transmission of the current over a wire of 2,500 miles. I have myself telegraphed over a distance of 1,000 miles on *iron wire* connecting through some twenty-five offices on the line, the imperfections of which must have caused a very considerable loss of current. But I found no difficulty in recording the signals; and I have seen it stated that messages have been sent from London to Lemberg in Galicia, a distance of 1,800 miles.

Now, the conducting power of iron wire is only about 18, copper being 100; and as the volume and strength of currents increase with the size of wire, a solution of at least a portion of the difficulty may be found.

The galvanic battery is claiming its full share of attention; and as it holds the same relation to the telegraph as steam does to the engine, we may expect new revelations of its power.

Supposing this submarine line accomplished, what would be the effect? Reaching Galway, in Ireland, we have a line to Dublin, and thence by submarine cable to Holyhead on the English coast, 70 miles. Or going north from Dublin to Belfast, we have another cable crossing the channel to Portpatrick, 27 miles. In fact, between Belfast and Portpatrick there are two distinct cables, so that England and Ireland are at this time joined by three distinct cables. The cable between Dublin and Holyhead contains but one conducting wire; but the cables between Belfast and Portpatrick each have six conducting wires. From these two points you cross England by more than half a dozen different routes to reach either Dover or Orfordness, connecting through the former with Calais, 25 miles, and, by another cable, with Ostend, 70 miles; and, through the latter, with the Hague, 135 miles; thence, following the sinuosities of the wires, you reach any or all of the principal cities of the continent. In one array you have Dublin and Cork, London and Liverpool, Paris, Madrid, Hamburg, Copenhagen, Munich, Vienna, Geneva, Milan, Venice, Naples, Trieste, Belgrade, Constantinople, Cracow, Dantzic, St. Petersburgh, Moscow, Odessa, Balaclava, and Sebastopol, all enjoying direct telegraphic communication with each other.

I now wish to call our attention to another important link. I have already referred to the submarine cable between Spezzia and the island of Corsica, 75 miles; across the island, 128 miles; by submarine cable, to Sardinia, 10 miles; and across Sardinia, 200 miles. From a southerly point of the island it is proposed (and will perhaps be done this season) to carry the line by cable 125 miles, to Secali on the African coast. From this point France will carry it underground to Algeria; while England, to reach her eastern possessions, will carry it by way of Alexandria, to connect with her extensive lines already constructed in India.

The cable laid between Spezzia and Corsica has six conducting wires. The two cables between Belfast and Portpatrick, and that between Dover and Ostend is the same, weighing about eight tons per mile. The cable between Dover and Calais has four conducting wires. The lightest cable is that between Dublin and Holyhead, having one conducting wire, weighing about one ton per mile, and laid in about 70 fathoms water.

Let us for a moment retrace our steps, and observe the grand scheme embraced within the lines already constructed and projected. We start from New Orleans, and passing through the seaboard cities of the Union to Halifax; thence, by submarine cable, to Galway; thence to Dublin; thence, by cable, to Holyhead; thence, by way of Liverpool, Manchester, and London, to Dover; thence, by cable, to Calais, Paris, Marseilles, Genoa, Spezzia; thence, by cable, to Corsica, Sardinia, and Secalia; thence to Alexandria, Suez, Damascus, Bagdad, Bassra, along the coast of Persia; and thence to Bombay, Madras, Calcutta; and thence to Singapore, Batavia, and the small islands, to Australia;—and thus we have a continuous telegraphic line of over 20,000 miles. As the lines from Bombay to Calcutta are finished, and the connection of Sardinia and Africa nearly so, it only requires the distance between Newfoundland and Ireland, 1,800 miles, and from Secalia to Bombay, 5,000 miles, to be constructed, to bring the ancient capitals of India and Persia within hailing distance of New York.

Still another line has been projected between the old and new world. Starting from San Francisco, and passing through Oregon, Washington Territory, and the British Possessions, to Behring's Straits, having about thirty (30) fathoms water; and thence, by cable across the Straits, to the Russian Empire; and so on, by many turns, to Moscow. It is not necessary for me to tire you with the details of this route, believing it to have too many disadvantages for an early accomplishment of the project.

It would be impossible, even within the limits of two or three evenings, to refer to the various lines now in operation, an analysis of their business, and the extent to which they are used by the different nations. Such tables, carefully prepared, would be a history of the present condition, prosperity, and progress of their people. A few years since, the person who should have ventured upon the suggestion of such results as we have been considering, would have been declared insane; and no attainments, however profound; no reputation, however respected, could have saved him from the imputation of a dreamer; and I hardly dare draw even the most probable inferences as to the result of having such a messenger between individual man and nation and nation. The many useful and wonderful inventions which are daily springing into life, seem to blunt our curiosity and blind us to their merits.

We seem to take them as a matter of course, and when any one more prominent than the rest is publicly brought to notice, busy heads and hands are at work to bring it to a useful standard. Franklin possessed this spirit, and we find a comical allusion to electricity in one of his letters to Mr. Collinson, of England, in 1749. He thus expresses his disappointment: "Chagrined a little that we hitherto have been unable to produce any thing in this way of use to mankind, and the hot weather coming on, when electrical experiments are not so agreeable, it is proposed to put an end to them for the season in a party of pleasure on the banks of the Schuylkill." "Spirits are at the same time to be fired by a spark sent from side to

side through the river, without any other conductor than the water, an experiment we some time since performed to the amusement of many. A turkey is to be killed for dinner by the electric shock, and roasted by the electric jack, before a fire kindled by the electrified bottle; when the healths of all the famous electricians of England, France, Holland, and Germany, are to be drunk in electrified bumpers, under the discharge of guns from the electrical battery." Although dealing thus playfully with the truths thus demonstrated, and without a knowledge of their tendency, he within a short time thereafter made his brilliant discovery of the identity of electricity and lightning. The world has done him homage, and electrical science, in her delicate manipulations, fabricates the rarest of her offerings to perpetuate his memory.

Could we do without the telegraph, is a question I suppose but seldom asked; and yet when a steamer is announced as at Halifax, and the wires break or other interruption occurs, business for the time stands still and anxious faces bespeak their disappointment. Or when a merchant has allowed the day of remittance to pass by and the telegraph saves him from protest, or the husband or friend who has missed a train and quiets all fears at home by a message, should prove how intimately it is blended with our everyday wants, and how necessary for our condition. To sweep it from existence would paralyze trade and commerce.

As a farther illustration of the uses of the telegraph I will take the business of the two lines between this city and Boston, which for their regularity of working and dispatch are not excelled. They frequently send and receive during one day from seven to eight hundred messages, besides doing the business of the press. Taking a month's business, that of November last, I find they transmitted—

1608	messages to buy goods.
1050	" sell goods.
1930	" making appointments.
374	" relating to sickness.
228	" " deaths.
1692	instructions to pay money and notes.
644	messages for railroads.
2020	reports of markets.
1320	social messages.
3130	messages respecting freighting and shipping.
750	" in cipher.
2140	on general mercantile matters.
3514	miscellaneous.
20400	messages for that month.

or a total of

If we take this as an average, we have 244,800 messages per annum between Boston and New York. Suppose the 35,000 miles of line distributed over the States to give but half this average, and this is considered a low estimate, we have 17,136,000 messages, producing a gross revenue of not less than $7,000,000.

Want of skill and judicious management, the loose manner in which lines have been constructed, calling for enormous repairs, and the want of harmony in the working system, dissipates all this large income, leaving but a nominal profit. In this respect, however, the telegraph system is not unlike the railway, and the returns are not to be found in dividends, but in the enhanced value of real estate, and higher prices for the productions of the soil, by increased facilities of transportation and communication. In all these the telegraph is not behind the railway. In fact it now forms a part of their outfit, enabling them to accomplish a larger amount of business by regulating trains and preventing disaster; an instance of which occurred in England in 1850. "A collision had occurred to an empty train at Gravesend; and the engineer having leaped from the engine, the latter started alone at full speed to London. Notice was immediately given by telegraph to London and intermediate stations; and, while the road was

kept clear, a buttress was prepared to receive the runaway. The superintendent also started down the road on an engine, and on passing the runaway he reversed his engine and had it transferred at the next crossing to the up line, so as to be in the rear of the fugitive. He then started in chase, and overtaking ran into it with speed, and the driver of his engine took possession of the fugitive, when all danger was at an end. Twelve stations were passed in safety, and when caught it was going at the rate of 15 miles an hour and within two miles of London." Most of our principal railways have each a telegraph line, for which they find constant employment; and I suppose it would be next to impossible for the Erie road to do its enormous business without the aid of its telegraph wires.

To resume the consideration of the mercantile and social messages, I stated the yearly business at 14,688,000 messages. This would give at least 146,880,000 words, which it is necessary to spell out letter by letter, each letter composed of one or more arbitrary signs, or dots and lines. Can it be expected that this work can be performed without mistakes? On the contrary when the difficulties and embarrassments of the clerk are understood, the correctness with which the immense number of dispatches is sent will excite our wonder. There are many persons who *rush* into the office; for it is conceded that the man who wants to use the wires is in a hurry. But he writes in hieroglyphics, or about as hard to decipher, and expects the telegrapher to find out in some way his meaning. If a canary bird had its foot dipped in ink and was made to walk across the paper, the resemblance to the writing would be quite good.

Some houses send their messages always in cipher, or a dictionary of words known only to the parties interested. In this way a saving is effected, and a monkey is made to stand for a barrel of flour, while a cat expresses its value in dollars. A donkey is made to convey or express a backward movement in stocks; and Reynard, stringency in the money market,—&c. &c. This is also done for the sake of secrecy,—a precaution I

do not for a moment consider necessary. The clerks are, as a whole, a highminded and honorable set of men. Besides the business to *them* becomes mechanical in its routine, and the family concerns of a nation, day by day brought under their notice, soon lose all interest. A man may telegraph to stop his runaway wife; but the receiving clerk simply passes it to the operator, with the remark, "Message in a hurry, man wants to stop his wife," and will seldom raise a smile. It is the duty of the telegraph to stop her; and, very much to her surprise, it does stop her. It is the terror of thieves, as well as the messenger of peace. Not an hour or a minute is passing without its co-operation, in supplying the wants and administering to the necessities of mankind.

The newspapers have been the most generous promoters and supporters of the telegraph, from the first hour of its existence: it has received their aid and encouragement; and at the present time the leading papers of this city expend annually for telegraph news alone the sum of *sixty thousand* dollars, while the papers of the interior and different States expend about ninety thousand dollars. It is only a fair statement to say that collectively the newspaper press of the country expend annually not less than $200,000, of which $60,000 is disbursed in this city. It is not unusual for their regular daily dispatch to contain 8,000 words; and when any important debate is going on in Congress, or other exciting cause, they will receive 15,000 words for one edition. It is not only an evidence of their enterprise and liberality, but of the sound minds that direct this great machinery of power.

If we stand amazed at the speed of the locomotive engine, as it rushes past us at the rate of forty miles an hour, our wonder ceases upon the contemplation of the mysterious ticking of a telegraph register. Take your stand for instance in a New York office, and talk with your friend in Buffalo 500 miles away. Each thought is no sooner uttered than received. If you take for comparison the circumference of the globe, and suppose a railroad round it. An engine traveling inces-

santly night and day, at twenty miles an hour, would take forty-two days to make the passage. But electricity with its speed of 100,000 miles in a second would sweep the distance ere the first revolution of the engine-wheel took place. If it speaks in poetry and romance, it also fulfills the prayer of the Spartans to their God, "to grant them the beautiful with the good."

No sooner were the deadly cannon pointed before Sebastopol and the rattle of muskets foretold the carnage of the battle-field, than a telegraph was needed to herald the tidings of defeat or victory. The flashing eye of exultation, which penned the dispatch to electrify all Europe with the fall of Sebastopol, was followed by others to bedew the graves of the heroes with a nation's tears.

Thanks to the telegraph, a mother could mourn her son while "the muffled drums were beating funeral marches to his grave."

Holding in your hand the telegraph-key, enabling you to converse in the distances of hundreds of miles, you experience an immortality of nature to be found under no other circumstances. Time and space are annihilated, and "*as quick as thought*," is no longer a proverb.

With a submarine cable joining Europe and America, our merchants would hold "high change" indeed,—discussing the day's transactions with the cities of London, Vienna, and Paris. A sale of "Illinois Centrals," or New York sixes, made in London at 5 P. M. will be discussed at the New York board at 12 o'clock. Or a message sent from New York to San Francisco at 12 o'clock, will reach its destination at a quarter before nine in the morning of the same day; and a message from New York at 12 o'clock will reach St. Louis at eleven. This all seems strange, and it becomes necessary to pause and reflect before it can be realized as truth. But truth it is; and "old father Time," hour glass and all, is completely beaten.

It will be observed on reference to the maps, that both in England and the United States the lines are diffused all over

the country, showing the commercial spirit which called them into existence. While in France, Paris is the center from which the lines radiate, and are made subservient to the government. The same may be said of Italy. While Russia's two long lines touch only her garrisons and naval stations, essentially performing a warlike and despotic mission.

But "there is a good time coming." As the morning mist is dispelled by the rising sun, so will civilization and commerce herald a brighter day for the ignorant and oppressed. Says Humboldt,—"There are nations more susceptible of cultivation, more highly civilized, more enobled by cultivation than others, but *none* in themselves *nobler than others*. All are in like degree designed for freedom; a freedom which in the ruder conditions of society belongs only to the individual, but which in social states enjoying political institutions, appertains as a right to the whole body of the community." "If we would indicate an idea which throughout the whole course of history has ever, more and more widely extended its empire, or which more than any other testifies to the much contested and still more decidedly misunderstood perfectibility of the whole human race, it is that of establishing our common humanity, of striving to remove the barriers which prejudice and limited views have erected amongst men, and treating all mankind, without reference to religion, nation, or color, as one fraternity, one great community. This is the ultimate and highest aim of society, identical with the direction implanted by nature in the mind of man towards the indefinite extension of his existence. He regards the earth in all its limits, and the heavens as far as the eye can scan their bright and starry depths, as inwardly his own, given to him as the objects of his contemplation, and as a field for the development of his energies."

By the continued conquests of science, the mind is enlarged and expanded, and the sluggard must press on with the crowd or stand aside. The Steamboat, the Locomotive, the Printing Press, and Telegraph are doing their work. The forests are

leveled and made the paths of thought; while the song of the reaper, and music of the anvil and hammer roll in echo from mountain to mountain, to tell of the progress of religious truth, freedom, and morality.

To the mariner's compass, the telescope, the microscope, and chronometer we owe much, for they have contributed to the happiness of the world. But they weigh light in the balance against the printing-press, the steam-engine, the electrical light, the lighting of our houses with the gaseous element of coal, or the telegraph with its lightning speed. For it is by these, born in our own generation, displaying the power and high mission of man, we see the future mapped out, ancient barriers destroyed, the elements subjected to his will, and the world brought into familiar intercourse.

I cannot, I would not, rob the many brilliant lights of science which shine upon our path, of a single ray. But I would point to the telegraph, the subject of our paper, and ask for a just appreciation of its merits. For if electricity and magnetism *now* stand brilliantly conspicuous, their further development and application will make them appear as the star of first magnitude; while the gigantic power of the steam-engine may dwindle into insignificance before the *powers of nature* which are yet to be revealed.

On every hand we perceive the truth of the general advancement of the human family to a condition far superior to any thing conveyed by mere civilization in the common acceptation of the term. We recognize this progress step by step towards a social condition in which nobler feelings, thoughts, and actions, instead of antagonism will produce a more refined and fixed condition of happiness. Man's course has not been regular, but constant; and so it will continue, marking his tread *onward and upward* in the sublime and appointed path whither time and destiny seem to call him.

Proceedings in Honor of the Memory of Dr. Kane.

American Geographical and Statistical Society,
University Buildings, Washington Square.
New York, 26th February, 1857.

At a meeting of the Society, held this evening, at their rooms at the New York University,

The President, the Rev. Francis L. Hawks, D. D., LL. D. in the Chair, supported by Henry Grinnell and Archibald Russell, Esqs., Vice-Presidents of the Society.

The President announced the death of Dr. Elisha Kent Kane, as follows:—

Gentlemen of the Society:

It becomes my sad duty as your presiding officer, to bring to your notice the removal by death, of one of our most distinguished associates. Our friend Dr. Kane, is no more. I knew him intimately, and the strong bond of our personal friendship while he lived, prompts me to solicit your indulgence, if I depart from the formality of a mere official announcement on this occasion, and render my brief and humble tribute to the worth of a man whom I greatly loved. In my observation of human nature, it has seldom fallen to my lot to meet a fellow-being possessed of more striking excellencies, or in whom there was a combination more rare of seemingly opposite qualities; in him, however, they were all harmoniously blended; and it was precisely this fact which made him to me an object of deep and affectionate interest. To a fine mind, inquiring and analytical, he added great industry, and what he deemed worthy of study at all, he studied thoroughly. The range of his attainments, too, was varied, and he had roamed largely over the wide-spread field of physical science. But varied and accurate as were his attainments, there was a beautiful simplicity and modesty so blended with them, that no one ever could suspect

him of feeling his superiority in learning over those with whom he mingled. He had not studied for ostentatious display, but for usefulness in his station. The strong trait in his character was his indomitable energy. In his small and feeble frame there was combined an iron will, a giant power of resolute purpose. Impulsive, ardent, as he was by nature, one might have expected that his would be just the disposition to leap prematurely to conclusions; but a very slight acquaintance soon proved that such was not his habit of mind. Rarely have I seen so much of impulsive warmth blended with the soberness of patient, laborious inquiry, and sound practical judgment, as in him. Thus, for instance, the strong conviction he had of the open Polar sea, which he lived long enough to discover, was founded on no hasty or happy guess. In conversations which he held with me on the probabilities of its existence, when our discussion turned entirely on scientific considerations, I found that he had reasoned out his conclusions by a chain of induction almost as strictly severe as mathematical demonstration; indeed, part of his process was mathematical. Before he sailed, he told me he was sure there was open water around the Pole, and that if he lived to return, he hoped to be able to tell me he had seen it. He no more proceeded on conjecture merely, than did Columbus in his assertion of the existence of our hemisphere. But with these intellectual traits, and with great personal intrepidity, he had a gentleness of heart as tender as a woman's. There was an overflowing kindliness in his soul which stirred up his benevolence to its lowest depths when he encountered human misery, whether of body or mind. He spared not time, nor toil, nor money, to relieve it. I may not violate the sacred confidence of private friendship under any circumstances, and least of all when the grave has for a time sundered the ties which bound us as earthly friends together; but were it lawful to speak all I know on this point, both as his almoner and adviser, I could move your generous sensibilities even to tears, by stories of as pure, disinterested, liberal, self-sacrificing efforts for others, as any it has been my lot to meet with in the records of human benevolence. Alas! my countrymen, what is his early grave but a noble testimonial to his humanity? He is dead himself, because he would snatch others from death.

Another remarkable trait in his character, was the power he had of commanding and exercising an irresistible influence over men. You, Sir (Mr. H. Grinnell), can bear witness with me to this. You have

seen him, with gentle firmness, when love and resolution were both unmistakably present, and both marvelously blended,—you have seen him encounter the unequivocal purpose of insubordination and rebellion in the person of the enraged, reckless, and desperate seaman, who refused obedience, and who possessed a physical power that could have killed him with a blow. You have seen that light, frail frame, that, alas! now sleeps in death, approach with quick, firm step, and with no weapons but such as nature gives; he but fixes his keen eye on the offender, and the clear sound of his voice rings upon the ear in no tone of passion or anger. He but talks, and there is some strange magic in his manner and his words; for presently the tears begin to roll down the rugged, sun-burnt cheeks of the hardy seaman; he has humanized him by some mysterious power made up of love and reason mixed. Rebellion dies, and in its place is born a reverence and affection so deep, so devoted, that to the end of our dead friend's life none love him better than the vanquished rebel.

These were some of his qualities as a man. Of what he has done in the cause of science, and of our chosen department in particular, there is but little need that I should speak. In a short career of but thirty-five years, he has left upon the times in which he lived his impress so indelibly stamped, that science numbers him with her martyrs, and will not let his memory die. He has told, too, so beautifully and modestly the story of his last, suffering pilgrimage in her cause and that of benevolence, that his remembrance will be kept green in the land of our fathers as well as in our own; for the English language is our common property, and that which is registered in the literature of that tongue, I love to think, is destined to a long existence and wide diffusion on our globe. Had he done less in *science*, England would not forget him: for his benevolent heart led him to seek the relief of Englishmen, undismayed by the horrors and perils of an Arctic voyage; but what he accomplished in science secured to him the generous tribute of acknowledgment and admiration from England's scientific men. He received there the medal of our sister institution, the Royal Geographical Society,—her highest tribute to eminent service in geographical discovery.

And as for ourselves, there is little danger that we shall forget him. He was a noble specimen of man, and he was our countryman. Letters may yield a graceful tribute to his worth in language fitted to her mournful theme; science may rear his monument, and tell the world

she weeps over one of her most gifted sons: and this is all right; but there is a more touching tribute to his memory than either of these.

> "*Affection* shall tenderly cherish his worth,
> And *memory* deeply engrave it,
> Not upon tablets of brass or stone,
> But *in those fond hearts where best 'twas known.*"

F. A. Conkling, Esq., offered the following Preamble and Resolutions, which were unanimously adopted, to wit:—

This Society having been informed of the death of Elisha Kent Kane, and deeming it due alike to the memory of our deceased associate and to the Society that his daring in the cause of humanity, and his achievements in science should be fitly commemorated, therefore, be it—

Resolved, That in the death of Dr. Kane this Society mourns the loss of a member whose name is illustrious before the nation, and throughout the civilized world, and whose fame we would fain believe will be as enduring as it is deserved; of one whose deeds ennoble our race, and shed the highest honor upon the land which gave him birth.

Resolved, That while we lament the to us untimely loss of our illustrious associate, we find consolation in the thought that his life was sufficiently prolonged to enable him to fill up the measure of his renown, and that his very youth but renders his great example the more eloquent to us, and the more inspiring to posterity.

Resolved, That the Council be requested to make arrangements for the delivery, at some future day, of a suitable eulogy upon the life and character of Dr. Kane.

Resolved, That a copy of these Resolutions with the Preamble, signed by the President and Recording Secretary, be transmitted to the family of the deceased, and that they be published.

Charles King, Esq., LL.D., President of Columbia College, in seconding the resolutions, remarked:—

It is sad to be called to mourn the loss of such an associate and such a fellow-countryman. He had already accomplished so much, he was so young, so full of life, of hope, of courage so full of resolute purpose, of ardent endeavor in the cause of science, so prompt at the call of humanity, so fearless in exposure to peril and fatigue, that it seemed not unreasonable to anticipate in the future we might expect more from him even than yet he had done. He had given, at the early age of

thirty-five, a name to the world that the world will not let die. It was not unreasonable to calculate that, in the ordinary course of human events, he might be reserved for greater triumphs, for worlds yet to be conquered. It was one of the dreams I had hoped to see realized, for him who had seen that sea inclosed with barriers of ice, that he might be reserved to be the first to cut its waters with a keel of his own. But all that has been otherwise disposed. *Diis aliter visum est.*

I do not propose to go into any extended notice of his deeds. What has been said from the chair, has been better stated than it could be by me; and we can only now express our deep sense of the loss the Society has sustained, and our great respect for the illustrious example our friend has left behind. I cannot take my seat, Sir, without offering a word of sympathy, deeply and sincerely, to one whose name must be inseparably connected with that of Dr. Kane,—Henry Grinnell, whose benevolence promoted and whose liberality furnished the means that enabled Dr. Kane to pursue his discoveries.

Dr. John W. Francis, with much emotion, made some remarks in reference to his acquaintance with Dr. Kane, and proceeded to speak as follows:—"I am grateful for the opportunity to give utterance to my own feelings of personal regret and delightful recollections, by concurring in the resolutions just offered by the distinguished member of the Geographical Society. While I accede fully to all that has been said in commendation of our friend's moral excellence, his attainments, his intrepidity, his disinterestedness, and his modesty,—while with you I deplore his untimely death; I yet rejoice in his rare and beautiful example. I am thankful for what he lived to accomplish. I cherish his memory as glorious to our country, to science, to humanity. My personal intercourse with Dr. Kane has impressed me with a deep sense of his singular fortitude and candor. I beheld, at our last interview, a few hours before his departure for Europe, with profound sorrow, the ravages of disease caused by heroic exposure and privation, and by his severe toil in his literary labors. I have heard, from time to time, with the warmest sympathy, of the success of his narrative, of his vacillating strength; and yet hoped to welcome him once more at the hospitable board of Mr. Grinnell, or in our midst here. Providence has ordered otherwise. He is no more; but his name is undying—forever associated with the capes and cliffs, the inlet and the open sea of the Arctic regions, with their flora, their natural history, with the progress of maritime discovery, with the memory of Sir John Franklin and his

noble lady, with the ca use of science, philanthropy, and truth. The point of view in which Dr. Kane's Arctic Expedition has mainly struck me, is one growing out of my knowledge of the man, as illustrated by the record of his adventures. That record, in the manly directness and unaffected candor of its details, presents an example of intelligent fortitude, Christian patience, and self-devotion, which acquires remarkable interest in contrast with the delicate organization of the writer; it is a rare and memorable example of the triumph of mind over body; it narrates wonders natural and moral, unsurpassed in curious novelty and suggestive knowledge from the story of Mandeville and the voyages of Cook down to the era of modern discovery. It breathes a grand lesson of moral courage, a beautiful revelation of scientific truth, and chronicles an unparalleled instance of benevolent enterprise. And all this derives new meaning and attraction from the association with the fate of a world-lamented pioneer into the frigid and dark regions of the North Pole, with the mutual and disinterested achievements of the Anglo-Saxon race, with the new combination of science and philanthropy that signalizes maritime explorations in our day. Such are a few of the salient points that give permanent and pathetic interest to his beautiful volumes. I feel assured that the Geographical Society will not be wanting in bestowing the proper meed of praise to the exalted merits of Dr. Kane."

The Rev. Dr. Joseph P. Thompson remarked:—"There is a greatness we admire, that we feel, but we cannot approach. There is a power of intellect, a force of will, to which we sometimes render a homage that even approaches to awe, but which kindles within us no responsive affection; like the grandeur of the glacier and the berg, which, though they kindle with auroral splendors, are still icy cold. But the greatness that we commemorate this evening, as yourself have said, Sir, while it commands the utmost homage of the intellect, touches the deepest sensibilities of the heart; for who is there of us that does not feel to-night that he has lost a brother? The rigors of our own winter have led us to appreciate the severity of his; and as we have read by our firesides that modest, thrilling narrative, he has come in and sat with us as a guest; and we have taken him to our parlors as a friend and brother. How many households, though they have never looked upon his face, yet feel now that they mourn a friend! Though a townsman of Dr. Kane, and from boyhood familiar with his name, I never had the good fortune to look upon his face; yet not only do I share in

the feeling which I have just now indicated, but as a minister of the Gospel, I feel under obligation to him for an example of both the active and the passive virtues rare in our world. Let me instance for a moment that which you yourself have so strongly indicated, an impulsive yet practical and minute benevolence. He had a love of science, a love of adventure, an honest desire for fame; yet that which quickened his pulse and nerved his will for that grand enterprise to the North, was Benevolence,—a desire to recover the lost Franklin and his men; or, if they were no more living, to bring back their remains that they might rest in an honored grave. The cry of that noble woman of England—that cry of affection, of supplication, of faith, of hope, that stirred the generous heart of the honored friend before me, and led him to volunteer all that was needed for that enterprise,—that it was that stirred Dr. Kane to volunteer for its accomplishment. And not only do we mark this characteristic as the grand motive of his enterprise, but we trace this benevolence most minutely in the whole record of that enterprise. His was emphatically that thoughtful kindness which always carries with it the wants of others, which anticipates those wants, which provides for them even in the minutest things, and in the most unostentatious way. Does he dispatch a little party to make an exploration for which he is for the present incapacitated by the feebleness of his body? He ransacks his own private larder, and the last remnants of what friends had given him as a parting remembrance, shall go to them, and cheer and comfort them on that expedition. If they started out in the fierce cold in the deep night, it crosses his mind that they may mistake their way, and swift as the foot of a dog or reindeer can carry him, he is on their trail and surprises them in their midnight wants. He is back to the ship with them again at morning, with new supplies. Do they tarry longer than his calculations? His delicate sensibilities told him they were in danger, and he overtakes that half-frozen party on their return; and when at length they reach the cabin of the ship, bewildered, benumbed, and stricken down with disease, he is first to be on his feet again, though hardly able to bear the weight of his own light, feeble body, because "it was necessary for others that I should arise." Did parties differ from him in judgment, and go away to seek their own fortunes, planning a return, and thus putting in peril the whole enterprise, and weeks after, does he learn from some stray Esquimaux that the party are suffering and ready to perish? All his powers are at once at

work to save them; and when at length they are brought back to the ship, not one word of reproach escapes his lips. He gives them the welcome of a brother, and vacates his own bunk for the comfortof the man who had led them away. And when he is called to follow to the grave one of that little crew, what tender sensibility, what refined affection, what delicate benevolence, in all the incidents of that trying scene!

But hardly less conspicuous than this trait of his character, was his self-reliance, that was indicated, I was told—for I was not present at the time—in a remarkable manner when he appeared before this Society in his last interview, when with scientific accuracy, as was his custom, having delineated upon the map the route he should follow, having laid before you his arguments, he said, "Leaving our vessels at this point, we shall proceed by sledges to this point, and then that, and at length rounding such a promontory we shall come to the open sea, and there we will launch upon it." Never boastful, his perfect self-reliance was based upon accurate study and knowledge of his own tried powers. When I speak of self-reliance, Sir, do not understand me to intimate that he had aught of that pride that disdains Providence. No, Sir, the reverse of this; but a self-reliance under Providence and a confidence in that all-wise Ruler whom he so frequently recognizes in his journal, and in the powers God had bestowed on him. How remarkable this trait appears through all the incidents of that fearful winter campaign, in providing for the wants of the crew, in carefully housing them, in arranging for the anticipated journey of the spring. Does the ship take fire? Will a few moments perhaps consume their habitation, their provisions, and cut them off to perish in the cold? How quick and yet how quiet, how thoughtful, how wise, how decided, how earnest, his plans to subdue the damage! and how instantly he conquers it! Does a deserter go boastfully to some distant tribe of Esquimaux, putting in peril the safety of the crew by exhibiting his insubordination and breaking down the authority of the captain? He is off by night, over hammock and floe, eighty miles distant, in the stiff cold; and that man is presently before him, marching back, obedient, to the ship. A man who could undertake that enterprise alone, and carry it through successfully, had inward powers, and a consciousness of those powers, equal to any task that his country or the providence of his God might impose upon him. Throughout all that journal, I think you do not find one trace of despondency—certainly none for himself. If ever he was disheartened, it was in view

of those whom he was now resolved to save. In the midst of perils and accumulated trials we find him meekly and gratefully recording in his journal, that amid all the discomforts they are more thankful for the blessings that remain. This quality enabled him to endure when all his comrades faltered, and made his presence like a sunbeam in their dingy cabin.

He died in a sunny clime, and will lie buried near his native city; but he also will be embalmed in the imperishable ice. Indeed, his records of the Arctic will be more permanent than the barriers of the Polar sea. The gigantic bergs that threatened to crush his little ship, touched by the wand of summer, are loosed from their moorings, float away upon the trackless ocean, and dissolve into empty vapor. The rainbow glories that illumine glacier and berg and floe with the returning sun, are quenched by the succeeding night. But the character and deeds of KANE shall stand like the granite coast, which neither summer heats nor the ceaseless waves of time dissolve; and the halo that encircles his name, shall know no night forever.

After some brief remarks by Richard Warren, Esq., in accordance with the sentiments before expressed, the Society adjourned.

Extract from the minutes.

WM. COVENTRY H. WADDELL.
Recording Secretary.

HONORARY MEMBERS.

[Number limited to twenty.]

Bache, Prof. A. D.	Washington.
Barth, Dr. Henry	Gotha.
De La Roquette, M.	Paris.
Fremont, John Charles	New York.
Humboldt, Baron Alex. Von	Berlin.
Kane, *Dr. Elisha K.	
Keilhau, Prof. M. B.	Russia.
Layard, Austen H.	London.
Maury, Lieut. M. F.	Washington.
Middendorff, Prof. Von	St. Petersburg.
Murchison, Sir Roderick I.	London.
Petermann, Dr. and Prof. Augustus	Gotha.
Quetelet, Lambert A. J.	Brussels.
Rawlinson, Lieut. Col. Sir Henry C.	London.
Ritter, Prof. Carl Von	Berlin.
Robinson, Rev. Edward, D. D.	New York.
Simpson, Sir George	Montreal.
Struve, Prof. Otto Von	St. Petersburg.

* Deceased.

CORRESPONDING MEMBERS.

Abert, Col. J. J.	Washington.
Alexander, John H.	Baltimore.
Chaix, Prof. Paul	Geneva, Switzerland.
Cook, Charles W.	San Francisco.
Cornell, Miss S. S.	New York.
Dickens, Asbury	Washington.
Duer, Lieut. J. K.	U. S. N.
Duncan, Wm. Henry	Hanover, N. H.
Force, Peter	Washington.
Gilman, Daniel C.	
Gilpin, Hon. Henry D.	Philadelphia.
Green, Gen. Thomas J.	Washington.
Gulick, Dr. L. H.	Micronesian Islands.
Guyot, Prof. A.	Princeton, N. J.
Kennedy, Hon. J. P.	Baltimore.
Leavenworth, Hon. E. W.	Syracuse, N. Y.
Livingston, Rev. David, D.D.	London.
Martin, R. Montgomery	London.
Mason, Hon. Charles	Washington.
Meehan, J. S.	Washington.
McClelland, Hon. Robert	Washington.
Negri, Christoforo	Turin.
Norman, Benjamin M.	New Orleans.
Olrick, J. C., Royal Inspector	North Greenland.
Palmer, Aaron H.	Washington.
Rogers, Prof. Henry D.	Boston.
Schade, Louis	Washington.
Shaw, Norton, —— Roy. Geog. Soc.,	London.
Seward, Hon. Wm. H.	Auburn, N. Y.
Seymour, Hon. Horatio	Albany.
Smith, Edward R.	Washington.
Somerville, Mrs.	England.
Stevens, Gov., Isaac I.	Olympia, W. T.
Ward, Col. Thomas W.	Tarrytown, N. Y.
Waring, George E., Jr.	Westchester.
Watts, Burghall G.	Carthagena, N. Granada.

RESIDENT MEMBERS.

*** *Those having* L. M. *preceding their names have compounded for life. The List includes all elections up to January* 1, 1857.

1856.....Abbott, Gorham D., ... 7 *Union Place.*
1856.....Abrams, John D., ... 233 *West Nineteenth St.*
1855.....Allen, William H, ... 428 *Fourth St.*
1853.....Alsop, Joseph W., ... 33 *Washington Square.*
1856.....Alvord, Alonso A., ... 10 *West Thirty-first St.*
1856.....Ames, Isaac, ... 119 *West Nineteenth St.*
1856.....Annan, William C., ... 94 *Wall St.*
1856.....Anthony, Jr., Jacob, ... 16 *Nassau St.*
1854.....Appleton, John A., ... 36 *West Twenty-third St.*
1856.....Appleton, Wm. H., ... 139 *Macdougal St.*
1852.....Arpin, Paul, ... 44 *Irving Place.*
1856.....Aspinwall, Wm. H., ... 33 *University Place.*
1853.....Astor, John Jacob, ... 100 *Tenth St.*
1856.....Averill, Augustin, ... 7 *East Seventeenth St.*
1856.....Averill, J. Otis.

1852....L. M. Bancroft, George, ... 17 *West Twenty-first St.*
1853.....Baird, Rev. Robert, D. D., . . 11 *Clinton St., Brooklyn.*
1856.....Baker, David F., ... 60 *Wall St.*
1856.....Ball, Henry, ... 717 *Houston St.*
1856.....Baldwin, Simeon, ... 48 *East Twenty-fifth St.*
1856.....Ballard, Loomis, ... 123 *Maiden Lane.*
1856.....Ballow, W. B., ... 24 *East Twenty-Second St.*
1856.....Barker, B. Fordyce, M. D., . . 70 *Union Place.*
1852....L. M. Barney, Hiram, ... 240 *Fourth St.*
1856.....Barstow, Caleb, ... 7 *Wall St.*
1856.....Bayard, Edward, M. D., . . . 6 *West Fourteenth St.*
1856.....Bassett, A. E.
1852.....Bean, M. Dudley, ... 48 *West Fourteenth St.*

1856.....Beach, Oakley, ... 61 *Cortlandt St.*
1856.....Beadle, Edward H., ... 42 *Bleecker St.*
1856.....Beakley, Jacob, M. D. . . . . 251 *Fourth Avenue.*
1856.....Beebee, Samuel J., ... 47 *Wall St.*
1856.....Berry, Richard, ... 65 *East Seventeenth St.*
1853.....Bird, George, ... 1 *East Seventeenth St.*
1856.....Blakeman, Birdsey, ... 115 *Nassau St.*
1856.....Black, William, ... 247 *Broadway.*
1856.....Bliss, Dallett, ... 27 *Old Slip.*
1856.....Bleecker, James, ... 7 *Broad Street.*
1852.....Bloodgood, Samuel DeWitt, . . 29 *East Twenty-eighth St.*
1852.....Blunt, Edmund, ... 27 *Munroe Place.*
1852.....Blunt, George W., ... 139 *West Twelfth St.*
1856.....Bogart, Alexander J., ... 315 *Pacific St., Brooklyn.*
1855.....Bogert, Henry K., ... 49 *William St.*
1855.....Bonney, Benj. W., ... 38 *Wall St.*
1856.....Booth, Wm. A., ... 66 *West Fourteenth St.*
1852.....Bradford, Alex. W., ... 140 *Ninth Avenue.*
1852.....Brevoort, J. Carson, ... 38 *Ninth St.*
1856.....Breed, John B., ... 404 *Broadway.*
1856.....Bradish, Luther, ... 36 *East Sixteenth St.*
1856.....Brodie, Alexander Oswald, . . 104 *Ninth St.*
1854....L. M. Brodhead, J. Romeyn, . . . 19*th St. and Second Avenue.*
1853.....Brower, John H., ... 45 *South St.*
1853.....Brown, James M., ... 20 *Waverley Place.*
1856.....Brown, Stewart, ... 21 *Waverley Place.*
1856.....Bull, John, ... 35 *Pine St.*
1856.....Bunting, John A., ... 11 *Livingston Place.*
1856.....Burnham, Frederick G., ... 141 *Eighth St.*
1853.....Burtus, James A., ... 71 *Munroe St.*
1853.....Butler, Charles, ... 12 *Wall St.*

1855.....Camp, Hugh N., ... 101 *Wall St.*
1856.....Carter, Robert, ... 5 *East Twentieth St.*
1856.....Champlin, Christopher, . . . 18 *Washington Place.*
1856.....Champlin, Elbert H., M.D. LL.D. . 18 *Washington Place.*
1855.....Chanler, John Winthrop, . . . 6 *Wall St.*
1853.....Chauncey, William, ... 10 *Old Slip.*
1856.....Chilton, James R., ... 93 *Prince St.*
1856.....Churchill, Timothy G., ... 90 *East Eighteenth St.*
1856.....Clark, Albert, ... 11 *Fifth Avenue.*
1856.....Clark, Frederick H., ... 28 *University Place.*
1856.....Clay, George, ... 56 *Clinton Place.*
1856.....Cobb, George T., ... 38*th St. and Fifth Avenue.*

1852.....Coddington, Thomas B., . . 76 *Broad St.*
1856.....Coffin, Edmund, ... 30 *Broad St.*
1856.....Coit, Henry A., ... 55 *Clinton Place.*
1856.....Colgate, Chas. C., ... 6 *Dutch St.*
1856.....Colgate, Robert, ... 5 *West Fourteenth St.*
1856.....Codwise, David, ... 27 *St. Mark's Place.*
1856.....Coleman, William T., ... 88 *Wall St.*
1855.....Coles, Jeremiah. .
1853.....Collins, Edward K., ... 56 *Wall St.*
1854.....Colton, George W., ... 172 *William St.*
1852....L. M. Colton, Joseph H., ... 172 *William St.*
1852.....Congdon, Charles, ... 28 *Cliff St.*
1855.....Conkling, Frederick A., . . . 103 *Tenth* (27 *Murray*) *St.*
1856.....Conner, James, ... 29 *Beekman St.*
1856.....Cook, John, Jr., ... 28 *Exchange Place.*
1856.....Cooley, James E., ... 78 *Fifth Avenue.*
1856.....Cooper, Edward, ... 17 *Burling Slip.*
1855.....Cooper, Peter, ... 17 *Burling Slip.*
1856.....Cornell, Wm. W., ... 139 *Centre St.*
1856.....Corning, Jasper.
1852.....Cotheal, Alexander I., ... 49 *Water St.*
1856.....Cousland, William, ... 154 *West Twenty-Fifth St.*
1856.....Crerar, John, ... 45 *Cliff St.*
1852.....Crooks, Ramsay, ... 58 *Broad St.*
1856.....Crooks, Ramsay, Jr., ... 14 *St. Marks Place.*
1856.....Crowen, Thomas J., ... 699 *Broadway.*
1854.....Culbert, John W., ... 24 *Old Slip.*
1856.....Currie, Chas. P., ... 33 *East Twelfth St.*
1856.....Curtis, George William, . . . 27 *Washington Place.*
1856.....Curtis, Lewis, ... 11 *East Fourteenth St.*
1856.....Curtis, William E., ... 106 *Broadway.*
1854.....Curtiss, Cyrus, ... 80 *Ninth St.*
1852.....Cutting, Fulton, ... 55 *Merchants' Exchange.*

1856.....Dabney, Charles H., ... 281 *Fifth Avenue.*
1855.....Daly, Chas. P., ... 84 *Eighth St.*
1855.....Dambmann, Chas. F., ... 14 *Park Place.*
1852.....Davis, Charles, ... 78 *Merchants' Exchange.*
1856.....Day, Horace H., ... 120 *Tenth St.*
1856.....De Angelis, Gideon, ... 42 *West Twenty-Seventh St.*
1856.....Degen, Chas. R., ... 7 *Gramercy Park.*
1856.....Delano, Joseph C., ... *New Bedford, Mass.*
1856.....Delano, Warren, ... 39 *La Fayette Place.*
1856.....Deming, Richard T., ... 36 *Wall St.*

1856.....Denison, Rev. Samuel D., . . *Bible House.*
1856.....Derby, James C., ... 119 *Nassau St.*
1856.....Detmold, William, M.D., . . . 103 *Ninth St.*
1856.....Dillon, Robert, ... 28 *and* 30 *Burling Slip.*
1853.....Dinsmore, Curran, ... 9 *Spruce St.*
1856.....Dinsmore, Samuel P., ... *S. E. cor.* 14*th St. &* 7*th Av.*
1852.....Disturnell, John, ... 16 *Beekman St.*
1856.....Dodge, William E., ... 43 *West Thirty-First St.*
1856.....Dodge, William E., Jr., . . . 43 *West Thirty-First St.*
1856.....Doremus, R. Ogden, M.D., . . 70 *Union Place.*
1856.....Douglass, Andrew E., . . . 89 *Wall St.*
1856.....Douglas, J. Hancock, ... 12 *Clinton Place.*
1856.....Duncan, Alexander W., . . . 2 *Washington Square.*
1856.....Duncan, William Butler, . . 233 *Fifth Avenue.*
1856.....Dunnel, Henry G., M. D., . . . 51 *St. Mark's Place.*
1855.....Dunshee, Henry W., ... 36 *Amos St.*

1856.....Edgar, James A., ... 95 *Front St.*
1852.....Elliott, Samuel M., M. D., . . 371 *Fourth Avenue.*
1856.....Ellis, George, ... 15 *Nassau St.*
1856.....Ellis, Samuel C., M.D., . . . 179 *Second Avenue.*
1856.....Elphinstone, William H., . . . 112 *East Twenty-First St.*
1856.....Ely, Abner L., ... 31 *Pine St.*
1854.....Ely, Charles, ... 15 *Nassau St.*
1856.....Elsworth, Henry, ... 143 *West Fourteenth St.*
1856.....Embury, Daniel, ... 74 *Clark St., Brooklyn.*
1856.....Emmet, Robert, ... 122 *Madison Avenue.*
1856.....Emmet, Thomas Addis, . . . 24 *University Place.*
1853.....Eyre, Henry S. P., ... 74 *Broad St.*

1856.....Faile, Edward G., ... 181 *Front St.*
1856.....Fairchild, Ezra R., D.D., . . 156 *Chambers St.*
1853.....Fearing, Daniel B., ... 5*th Av. cor. of Fifteenth St.*
1856.....Fellows, Chas. H., ... 74 *Beekman St.*
1856.....Fellows, Richard C., ... 103 *Second Avenue.*
1856.....Felt, Willard, ... 14 *Maiden Lane.*
1856.....Felt, William N., ... 21 *Bond St.*
1856.....Ferguson, John, ... 35 *Pine St.*
1856.....Fernbach, Henry, ... 101 *Third Avenue.*
1856.....Fetridge, William P., ... *Everett House.*
1856....L. M. Field, Benjamin H., ... 21 *East Twenty-Sixth St.*
1852....L. M. Field, Hixon W., ... *St. Germain Hotel.*
1854.....Field, Cyrus W., ... 11 *Cliff St.*
1856.....Field, David Dudley, . . . 86 *East Twenty-First St.*

1856.....Field, Dudley, ... 86 *East Twenty-First St.*
1852.....Field, Maunsel B.
1856.....Fiedler, Ernst, ... 32 *Broadway.*
1854.....Fish, Hamilton, ... *Cor. of 17th St. and 2d Ave.*
1855.....Fisher, Richard S., M.D.
1856.....Fitch, S. S., M.D., ... 714 *Broadway.*
1852.....Fleming, Augustus, ... 10 *Bond St.*
1856.....Folsom, George, ... 212 *Second Avenue.*
1856.....Ford, James K., ... 115 *Wall St.*
1856.....Forrester, Hiram M., ... 134 *West Twenty-First St.*
1855.....Fosdick, William W., ... 347 *Broadway.*
1856.....Foster, Frederick G., ... 65 *South St.*
1856.....Fowler, Isaac V., ... *New York Hotel.*
1856.....Fowler, Frederick R., ... 11 *East Twenty-Sixth St.*
1853.....Francis, John W., M.D., ... 1 *Bond St.*
1856.....Fraser, Thomas, ... 20 *West Twenty-Second St.*
1854.....Frazer, Maj. W. D., U. S. A., . . . 70 *Broadway.*
1853.....French, Benjamin F., ... 94 *Clinton Place.*
1856.....French, James, ... 153 *West Twenty-Second St.*
1855.....Frost, Joseph B., ... 40 *Water St.*
1856.....Frye, Jed, ... 72 *West Thirty-First St.*
1856.....Fuller, Dudley B., ... 42 *West Fourteenth St.*
1856.....Furniss, William, ... 35 *Wall St.*

1853.....Gaillard, Joseph, ... 34 *South St.*
1856.....Gale, William, ... 28 *West Twenty-First St.*
1856.....Gans, Meyer, ... 52 *Exchange Place.*
1856.....Gescheidt, Anthony, Jr., M. D. . . 44 *Clinton Place.*
1856.....Gibson, Ebenezer, ... 143 *Front St.*
1856.....Gilbert, Albert, ... 146 *Grand St.*
1852.....Goodhue, Robert C., ... 64 *South St.*
1856.....Gourlie, John H., ... 1 *Hanover St.*
1856.....Grant, Oliver D. F., ... 11 *Gramercy Park.*
1854.....Grant, S. Hastings, ... *Mercantile Library.*
1852.....Gregory, Lewis, ... 38 *Pine St.*
1855.....Green, James, ... 14 *Wall St.*
1856.....Greenwood, Isaac J., ... 142 *West Fourteenth St.*
1853.....Grinnell, Cornelius, ... 87 *South St.*
1852.....Grinnell, Henry, ... 87 *South St.*
1853.....Grinnell, Moses H., ... 78 *South St.*
1856.....Griswold, Almon W., ... 13 *East Thirtieth St.*
1856.....Groshon, John, ... 73 *Sixth Avenue.*
1856.....Guernsey, Egbert, ... 19 *West Twenty-Second St.*

1856.....Haight, Richard K., ... 170 *Water St.*
1856.....Hall, Valentine G., ... 16 *Gramercy Park.*
1856.....Halstead, Caleb O., ... 155 *Second Avenue.*
1856.....Halstead, Robert, ... 1 *West Fourteenth St.*
.....Hamilton, Edmund, ... 63 *Wall St.*
1856.....Hand, John H., ... 49 *Wall St.*
1854.....Hart, M. G., ... *Washington, D. C.*
1852.....Hargous, Peter A., ... 76 *Fifth Avenue.*
1856.....Harrington, Luke, ... 122 *Water St.*
1855.....Harrison, Thomas F., ... 41 *Greenwich Avenue.*
1854.....Hasbrook, A. B., ... 193 *Twelfth St.*
1856.....Hatfield, Amos F., ... 78 *East Nineteenth St.*
1856.....Hawes, W. E., ... *People's Bank, Canal St.*
1852.....Hawks, Rev. Francis L., D.D., LL.D., 64 *East Twenty-First St.*
1856.....Haydock, George G., . . . 30 *Broad St.*
1855.....Hearn, George A., ... 425 *Broadway.*
1856.....Hedden, Josiah, ... 59 *Broadway.*
1856.....Heiser, Henry A., ... *Fifth Avenue and 36th St.*
1856.....Herrick, John J., ... 20 *West Twenty St.*
1856.....Herring, Silas C., ... 102 *Fifth Avenue.*
1855.....Hewitt, Abram S., ... 17 *Burling Slip.*
1856.....Hodges, John T., ... 271 *Broadway.*
1856.....Hoge, William, ... 40 *Wall St.*
1856.....Holmes, Silas, ... 48 *Bond St.*
1856.....Homans, Sheppard, ... 111 *Broadway.*
1856.....Howard, Joseph, Jr., ... 34 *Broadway.*
1856.....Howland, Williams, ... 106 *Wall St.*
1853.....Hunt, Thomas, ... 92 *William St.*
1856.....Hunt, Wilson G., ... 36 *Park Place.*
1856.....Hunter, James, ... 174 *Front St.*

1852....L.M. Jay, John, ... 20 *Nassau St.*
1856.....James, Albert S., ... 10 *Wall St.*
1856.....Jarvis, Jay, ... 7 *Forsyth St.*
1856.....Jaudon, Samuel, ... 54 *Wall St.*
1856.....Jessup, Morris K., ... 44 *Exchange Place.*
1856.....Johnson, Amos, ... 73 *East Twelfth St.*
1855.....Johnson, Bradish, ... 64 *Fifth Avenue.*
1856.....Johnson, Hezron A., ... 105 *Fifth Avenue.*
1855.....Johnston, John T., ... 69 *Wall St.*
1856.....Johnston, James B., ... 56 *Tenth St.*
1852.....Jones, John D., ... 51 *Wall St.*
1855.....Jones, Rev. Lot, ... 77 *Second Avenue.*
1856.....Joslin, Benjamin F., M. D., . . 72 *University Place.*

1855.....Kearny, Edward, ... 139 *Front St.*
1856.....Kelly, John J., ... 137 *Front St.*
1856.....Kelly, Robert E., ... 45 *Beaver St.*
1854.....Kennedy, R. Lenox, ... 63 *Beaver St.*
1856.....Ketchum, Hiram, Jr., ... 29 *William St.*
1853.....Kimball, Richard B., ... 49 *Wall St.*
1854.....King, Charles, LL. D., ... *Columbia College.*
1852.....Kingsland, Ambrose C., . . . 55 *Broad St.*
1856.....Kirkwood, James P., ... 353 *Fulton St., Brooklyn.*
1856.....Kissam, Richard S., M. D., . . . 9 *Great Jones St.*
1856.....Knapp, Shepherd, ... 33 *Wall St.*
1856.....Kneeland, Charles, ... 49 *William St.*
1856.....Knevitt, George M., ... 65 *Wall St.*
1856.....Knoedler, M., ... 366 *Broadway.*

1856.....Lamson, Charles, ... 114 *Tenth St.*
1856.....Lane, Robert, ... 215 *Tenth St.*
1856.....Lanier, James F. D., ... 54 *Tenth St.*
1852.....Latson, John W., ... 79 *Nassau St.*
1854.....Lawrence, Alex. M., ... 82 *East Twenty-First St.*
1856.....Lawrence, William S., ... 94 *Broad St.*
1852....L.M. Leavitt, Joshua, ... 22 *Beekman St.*
1856.....Leake, Godfrey W., ... 142 *Canal St.*
1856.....Leet, Allen N., ... 135 *Water St.*
1854.....Lefferts, Marshall, ... 70 *Broad St.*
1856.....Leroy, Jacob R., ... 26 *La Fayette Place.*
1856.....Lindsley, Caleb F., ... 11 *Wall St.*
1856.....Little, Edward B., ... 20 *Washington Place.*
1852....L.M. Livingston, Cambridge, . . . 17 *Wall St.*
1856.....Lockwood, Le Grand, ... 127 *West Fourteenth St.*
1852.....Lowry, Francis B., ... 156 *Broadway.*
1856.....Ludlow, Ezra, ... 43 *Water St.*

1856.....Manners, David S., ... 7 *Wall St.*
1856.....Marsh, Samuel, ... 45 *John St.*
1856.....Marshall, Charles H., ... 38 *East Fourteenth St.*
1856.....Mason, Daniel G., ... 110 *Duane St.*
1856.....Mason, John L., ... *Trinity Building.*
1856.....Mason Sidney, ... 132 *Fifth Avenue.*
1856.....Maxwell, John, ... 140 *West Fourteenth St.*
1854.....McAlpin, William J., ... *Office Erie R. R.*
1852.....McKaye, James, ... 82 *Broadway.*
1856.....McKillop, John, ... 5 *Beekman St.*
1856.....McNamee, Theodore, ... 112 *Broadway.*

1852.....McVickar, William H., ... 18 *Exchange Place.*
1854.....Merriam, E., ... *Brooklyn Heights.*
1856.....Meyer, Henry, ... 30 *Cliff St.*
1852.....Myers, T. Bailey, ... 229 *Broadway.*
1855.....Miles, Pliny.
1856.....Miller, Edmund H., ... 63 *Wall St.*
1856.....Miner, William, M. D., ... 65 *Irving Place.*
1856.....Minturn, Robert B., ... 60 *Fifth Avenue.*
1856.....Minturn, Thomas R., ... 115 *Pearl St.*
1854.....Mitchell, Matthew, ... 111 *Water St.*
1856.....Mitchell, Roland G., ... 8 *West Nineteenth St.*
1856.....Mitchill, Samuel L., ... 25 *Union Place.*
1856.....Monroe, Ebenezer, ... 247 *Broadway.*
1854.....Moran, Charles, ... 1 *Hanover Square.*
1854.....Morgan, Capt. E. E., ... 70 *South St.*
1856.....Morgan, Edwin D., ... 68 *Front St.*
1853.....Moore, George H., ... *N. Y. Historical Society.*
1856.....Morse, A. Wellman, ... 63 *Wall St.*
1854.....Morse, Sidney E., ... 138 *Nassau St.*
1855.....Morton, Alvin C., ... 110 *Broadway.*
1856.....Mount, Alfred R., ... 64 *Wall St.*
1856.....Murdock, Uriel A., ... 291 *Fifth Avenue.*

1856.....Negus, Thomas S., ... 100 *Wall St.*
1856.....Neilson, Anthony B., ... 31 *East Twenty-second St.*
1856.....Nestell, Daniel D. T., M. D., . . . 68 *West Thirty-second St.*
1856.....Niblo, William, ... *Niblo's Garden.*
1856.....Nichols, Effingham H., ... 377 *Fourth St.*
1856.....Nichols, William S., ... *Cor. Ex. Place & William St.*
1856.....Nicolay, Albert H., ... 4 *Broad St.*
1856.....Norton, Robert, ... 9 *South St.*
1856.....Noyes, William Curtis, ... 50 *Wall St.*

1856.....Oakley, Edward J., ... 133 *West Twenty-third St.*
1855.....Oakley, Henry A., ... 66 *Wall st.*
1856.....O'Brien, James, ... 150 *Broadway.*
1856.....Odell, George F., ...
1856.....Oelrichs, Edwin A., ... 68 *Broad St.*
1852.....Osgood, A. A., ...
1855.....Osgood, Rev. Samuel, ... 86 *West Eleventh St.*

1856.....Palmer, John J., ... 230 *Fourth St.*
1856.....Parker, Edward H., M. D., . . . 279 *Fourth Avenue.*
1856.....Parmly Ehrick, ... 1 *Bond St.*
1856.....Pavenstedt, Edmund, ... 38 *New St.*

1855.....Pell, John Augustus.
1856.....Penfold, Edmund, ... 178 *Front St.*
1856.....Pentz, Benj. J., ... 153 *Bowery.*
1856.....Perit, Pelatiah, ... 64 *South St.*
1856.....Phillips, James W., ... 52 *South St.*
1855.....Pierrepont, Edwards, . . . 27 *Wall St.*
1852....L. M. Pierrepont, Henry E., . . . 53 *Broadway.*
1856.....Pierson, Henry L., ... 24 *Broadway.*
1852....L. M. Poor, Henry V., ... 9 *Spruce St.*
1856.....Potter, Gilbert, Jr., . . . 181 *Front St.*
1856.....Porter, Mortimer, ... 110 *Ninth St.*
1856.....Powers, Thomas J., ... 50 *Wall St.*
1853.....Pratt, George W., ... 92 *Fifth Avenue.*
1853.....Pratt, Zadoc, ... 92 *Fifth Avenue.*
1852.....Prime, Frederick, ... 54 *Wall St.*
1855.....Pullen, John A., ... 221 *West Fourteenth St.*
1856.....Putnam, C. S., ... 35 *Bond St.*

1856.....Rait, Robert, ... 154 *East Nineteenth St.*
1856.....Randolph, Anson D. F., . . . 64 *Bedford St.*
1856.....Rankin, Robert G., . . . *Trinity Building.*
1856....L. M. Raphall, Rev. Morris J., DR. P., . 94 *Macdougal St.*
1856.....Remsen, William, ... 22 *William St.*
1856.....Richards, Joseph W., M. D., . . 12 *Clinton St.*
1856.....Riker, John H., ... 150 *Nassau St.*
1856.....Robbins, Henry A., ... 15 *Maiden Lane.*
1855.....Robertson, Daniel A., . . . 34 *Barclay St.*
1853....L. M. Robinson, Rev. Edward, D. D., . . 257 *Greene St.*
1853.....Robinson, Henry B., ... 111 *Broadway.*
1856.....Robbins, George S., ... 54 *William St.*
1856.....Rockwell, Charles W., . . . 8 *Wall St.*
1856.....Root, Russell C., ... 16 *Nassau St.*
1856.....Rowe, Jacob, ... 8 *Broadway.*
1854.....Ruggles, Samuel B., ... 110 *Broadway.*
1852....L. M. Russell, Archibald, ... 45 *Tenth St.*
1856.....Russell, Charles H., ... 2 *Great Jones St.*
1856.....Russell, William H., ... 686 *Broadway.*
1854.....Rutherfurd, Lewis M., ... 175 *Second Avenue.*
1855.....Rutherfurd, Robert W., . . . *Belleville, N. J.*

1856.....Salmon, James, ... 10 *Livingston Place.*
1856.....Sampson, Joseph, ... 2 *Bond St.*
1856.....Sanger, George J., ... 193 *Pearl St.*
1856.....Sargent, Epes W., ... *Everett House.*

RESIDENT MEMBERS.

1856.....Schieffelin, Sidney A., . . . 13 *East Twenty-sixth St.*
1856.....Schmidt, John W., M. D., . . . 5 *East Twelfth St.*
1856.....Schermerhorn, William C., . . 68 *Wall St.*
1856.....Schreiner, Osmond H., . . . 71 *West Nineteenth St.*
1856.....Schroeter, George, . . . 111 *Broadway.*
1856.....Schuchardt, Frederick, . . . 29 *Washington Place.*
1856.....Sears, Alfred.
1856.....Sears, Herman B., ... 71 *West Twenty-second St.*
1856.....Sedgwick, Theodore, . . . 44 *Wall St.*
1856.....Seton, Alfred, ... 49 *Wall St.*
1854.....Sewall, Henry F., ... 78 *South.*
1856.....Seymour, Isaac, ... 201 *West Fourteenth St.*
1853.....Seymour, Horatio, . . . *Albany.*
1856.....Schaffer, Chauncey, ... 71 *East Twelfth St.*
1856.....Schaffner, Talford P.
1856.....Sheffield, Joseph B., . . . 40 *East Twenty-second St.*
1856.....Sheldon, Preston, ... 92 *Market Slip.*
1856.....Shepherd, Daniel, ... 124 *West Fourteenth St.*
1856.....Sherman, John, ... 11 *Coenties Slip.*
1856.....Sherman, Watts, ... 13 *Nassau St.*
1853.....Sibell, William E., . . . 20 *Wall St.*
1852.....Smith, J. Calvin, ... 71 *Nassau St.*
1853.....Smith, James McC., M. D., . . 55 *West Broadway.*
1853.....Smith, James O., M. D., . . . 81 *Clinton Place.*
1856.....Smith, U. J., ... 38 *East Fourteenth St.*
1856.....Smith, Capt. Melancthon, U. S. N., . 2 *West Twenty-fifth St.*
1856.....Spencer, Lorillard, . . . *Cor. Fifth Av. & Sixteenth St.*
1856.....Spofford, Paul N., ... 4 *East Fourteenth St.*
1855.....Squier, E. George.
1853.....Stevens, Rev. Abel, ... 200 *Mulberry St.*
1854.....Stevens, Alexander W., M. D.
1853.....Satterthwaite, T. B., . . . 50 *Wall St.*
1856.....Stebbins, Henry G., . . . 2 *West Sixteenth St.*
1856.....Stokes, Benaiah G., ... 46 *West Twenty-fifth St.*
1856.....Storm, Walter, ... 104 *Broad St.*
1853.....Stout, Aquila G., ... 71 *Wall St.*
1856.....Stout, Theodore, ... *St. Denis Hotel.*
1856.....Stratton, James T., ... 111 *Fourth Avenue.*
1856.....Stringer, James, ... 429 *Broome St.*
1856.....Strong, William K., ... 40 *Union Place.*
1856.....Strube, Frederick, M. D., . . 4 *Leroy Place.*
1856.....Sturgis, Russell, ... 164 *Tenth St.*
1856.....Stuyvesant, Gerard, . . . 124 *Second Avenue.*
1855.....Stuart, Robert L., ... 171 *Chambers St.*

1856.....Sutphen, Ten Eyck, ... 104 *Broadway.*
1856.....Suydam, Peter M., ... 25 *Waverley Place.*

1854.....Taber, Charles C., ... 76 *Wall St.*
1856.....Talmage, Daniel, ... 60 *Water St.*
1855.....Taylor, George, ...
1856.....Taylor, Rev. Thomas House, D. D., . *Grace Church, Broadway.*
1855.....Tellkampf, Theodore A., M. D., . 198 *Fourth St.*
1856.....Thomas, Griffith, ... 101 *Fifth Avenue.*
1854.....Thompson, Rev. Joseph P., . . 63 *Amity St.*
1856.....Thomson, John, ... 232 *West Twenty-second St.*
1856.....Thurston, Frederick G., . . . 94 *South St.*
1856.....Tibbetts, Henry B., ... 111 *Broadway.*
1856.....Tiffany, Charles F., ... 195 *Tenth St.*
1856.....Tillou, Francis R., ... 42 *Laight St.*
1856.....Timpson, R. H., ... 161 *Front St.*
1854.....Tileston, Thomas, ... 29 *Broadway.*
1852.....Tomes, Benjamin, ... 6 *Maiden Lane.*
1855.....Tomes, Francis, Jr., ... 12 *West Twenty-first St.*
1856.....Tooker, Richard A., ... *Nassau Bank.*
1856.....Townsend, Randolph W., . . . 140 *Broadway.*
1856.....Townsend, William A., . . . *Cor. Broadway & Ann St.*
1856.....Travers, William R., ... 20 *William St.*
1856.....Treadwell, Henry R., ... 550 *Broadway.*
1856.....Tremain, Edwin R., ... 130 *East Thirteenth St.*
1856.....Trenor, John, ... 1 *University Place.*

1856.....Vandervoort, Peter H., . . . 243 *Water St.*
1856.....Van Buren, Wm. H., ... 24 *East Twenty-second St.*
1856.....Vermilye, Wm. E., ... 44 *Wall St.*
1854.....Viele, Egbert L., ... 27 *Amity St.*
1856.....Vincent, Edward, ... 106 *Bleecker St.*
1854.....Vinton, Rev. Francis D., D. D., . . 31 *Vesey St.*

1856.....Wade, John, ... 110 *Broad St.*
1855.....Waddell, Wm. C. H., ... 24 *William St.*
1856.....Walke, Cornelius, M. D., . . . 213 *Second Avenue.*
1856.....Walker, Francis C., ... 43 *West Nineteenth St.*
1856.....Waterbury, Lawrence, ... 104 *East Fifteenth St.*
1856.....Warren, Richard, ... 9 *Clinton Place.*
1856.....Warren, James K., ... 65 *Wall St.*
1854.....Ward, Augustus H. . . . . 14 *Washington Place.*
1853....L. M. Watts, Ridley, ... 27 *East Twentieth St.*
1854.....Watts, Robert, M. D., ... 200 *Twelfth St.*

1854.....	Webb, William H.,	72 *St. Mark's Place.*
1856.....	Weed, Ebenezer S.,	29 *Ferry St.*
1856.....	Wells, Jacob,	52 *John St.*
1856.....	Westermann, Bernard,	290 *Broadway.*
1856.....	Wetmore, David,	105 *Ninth St.*
1854.....	Wetmore, Samuel,	73 *South St.*
1855.....	Wheeler, David E.,	237 *Broadway.*
1856.....	Whipple, Augustus W.,	24 *Merchants' Exchange.*
1856.....	Wheatley, Charles M.,	9 *Bleecker St.*
1856.....	White, John H.,	59 *Nassau St.*
1856.....	White, Ezra,	18 *West Sixteenth St.*
1856.....	Whitlock, Benjamin M.,	13 *Beekman St.*
1856.....	Williams, John E.,	*Metropolitan Bank.*
1856.....	Wilder, Benjamin G.,	122 *Water St.*
1855.....	Winthrop, Benj. R.,	134 *Second Avenue.*
1854....	L. M. Witthaus, Gustavus H.,	34 *Barclay St.*
1854....	L. M. Witthaus, Rudolph A.,	34 *Barclay St.*
1856.....	Wood, Fernando,	*City Hall.*
1856.....	Wood, Rev. A. Augustus,	21 *Amity Place.*
1855.....	Wright, William W.,	93 *Liberty St.*
1852.....	Wyman, Luther B.,	38 *Burling Slip.*
1856.....	Young, Francis G.,	59 *Nassau St.*
1852....	L. M. Zimmerman, *John C.,	74 *South St.*

* Deceased.